ADDENDUM NO. 1
TO
PLANS AND SPECIFICATIONS
FOR
EDITH KANAKAʻOLE MULTI-PURPOSE STADIUM
BUILDING ADDITION & IMPROVEMENTS
JOB NO. PR-4166
SOUTH HILO, HAWAIʻI
COUNTY AND STATE OF HAWAIʻI

NOTICE TO BIDDERS

The items listed below are made a part of the current contract and shall govern the work, taking precedence over the previously issued specifications and drawings governing the particular item of work mentioned.

PRE-BID CONFERENCE MINUTES

The Pre-Bid Conference Agenda dated November 14, 2012, including attendance log is provided for the record; 6 pages total, attached.

REQUEST FOR INFORMATION/REQUEST FOR CLARIFICATION

1. **QUESTION**: *Is the Termite Control – Section 02361, for all three termite control methods (Basaltic termite barrier system, Termite control barrier system, Chemical soil treatment), or is it an either/or choice of termite control method?*

   RESPONSE: The Contractor may choose one of the three termite control measures listed in the specification.

2. **QUESTION**: *Regarding Termite Control Barrier System (stainless steel mesh) –is the intent for all termite entry points to be protected or is it for a partial installation to only pipe penetrations. (Paragraph 3.04 A. 1— states "fit and clamp mesh all around pipe penetrations" but further down that section- paragraph 3.04 C states "Where required, mesh is integrated into subsequent construction …")*

   RESPONSE: All pipe penetrations through the building slab shall be protected.

3. **QUESTION**: *Are junction boxes shown for future ceiling fans?*

   RESPONSE: Sheet E2.1; the J-boxes shown (DRI 24, DRI-26, DRI-28, DI-30, DRI-32, DRI-34) are for the ceiling fans to be installed as part of the contract.

PRE-QUALIFIED AND APPROVED SUBSTITUTIONS

Section and Paragraph	Specified Item or Product	Accepted Substitution	Deviations Noted
07400 – STANDING SEAM METAL ROOFING	Berridge Curved Tee Panel, Shur-Lock Standing Seam Panels, MAC-175	Klockner Metals MAC-150 curved	1-1/2" rib 12" or 14" on center, mechanically seamed ribs, no battens
07410 – PREFORMED METAL ROOFING	Pattern #7 by Custom Metal Roofing	Klockner Metals Deep Corrugation	None

SPECIFICATIONS

ITEM NO. 1: Specification Section Table of Contents

DELETE pages 1 and 3 in their entirety and **REPLACE** with the attached sheets 1 and 3.

ITEM NO. 2: Specification Section 01715 – EXISTING CONDITIONS – HAZARDOUS MATERIALS SURVEY

ADD Specification Section 01715 – EXISTING CONDITIONS – HAZARDOUS MATERIALS SURVEY, attached herein (5 pages).

ITEM NO. 3: Specification Section 02900 - LANDSCAPE PLANTING & MAINTENANCE

DELETE paragraph 2.05.L. in its entirety and **REPLACE** with the following:

"L. ¾" Gravel Groundcover: (no fines), 4" minimum depth, natural blue rock color or approved equal. Submit sample for approval prior to delivery to the site".

ITEM NO. 4: Specification Section 02900 - LANDSCAPE PLANTING & MAINTENANCE

DELETE paragraph 2.05.M. in its entirety and **REPLACE** with the following:

"M. 1" diameter black cinder: (no fines), 6" minimum depth. Submit sample for approval prior to delivery to the site".

ITEM NO. 5: Specification Section 07130 – INTEGRALLY BONDED UNDERSLAB VAPOR BARRIER

ADD 1.09 D.

D. "The Surety shall not be held liable beyond two years of the project acceptance date."

ITEM NO. 6: Specification Section 10523 – FIRE EXTINGUISHERS

DELETE Section 1.05 B in its entirety and **REPLACE** with the following

B. Manufacturer's Warranty Period Six years from date of Final Completion, the Surety shall not be held liable beyond two years of the project acceptance date.

ITEM NO. 7: Specification Section 13281 – REMOVAL AND DISPOSAL OF ASBESTOS - CONTAINING MATERIALS

ADD Specification Section 13281 – REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING MATERIALS, attached herein (23 pages).

ITEM NO. 8: Specification Section 13282 – LEAD HAZARD CONTROL

ADD Specification Section 13282 – LEAD HAZARD CONTROL, attached herein (13 pages).

ITEM NO. 9: Specification Section 13284 – REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCB)-CONTAINING LIGHT BALLASTS AND MERCURY-CONTAINING LAMPS

ADD Specification Section 13284 – REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCB)-CONTAINING LIGHT BALLASTS AND MERCURY-CONTAINING LAMPS, attached herein (11 pages).

ITEM NO. 10: Specification Section 13288 – TESTING/AIR MONITORING

ADD Specification Section 13288 – TESTING/AIR MONITORING, attached herein (2 pages).

ITEM NO. 11: Specification Section 15450 – PLUMBING FIXTURES

DELETE Specification Section 15450 in its entirety and **REPLACE** with Specification Section 15450, attached herein (7 pages)

ITEM NO.12: Specification Section 16512 – CEILING FANS

ADD Specification Section 16512 – CEILING FANS, attached herein (6 pages).

ITEM NO. 13: **ADD** Specification Section Appendix, items 1-3:

Appendix:

ITEM NO. 1 - Dressing Room Building: Truss Layout drawing prepared by HPM, dated 11/08/12 (1 page).

ITEM NO. 2 - Dressing Room Building: Truss design calculations prepared by HPM, dated 11/08/12 (11 pages).

ITEM NO. 3 – Report titled *HAZARDOUS MATERIALS SURVEY REPORT FOR HO'OLULU EDITH KANAKA'OLE MULTI-PURPOSE FACILITY, 350 KALANIKOA STREET, HILO, HI* (99 pages), prepared by Myounghee Noh & Associates and dated November 13, 2009

DRAWINGS

Addendum 1 revisions marked on the plans with a delta 1 symbol, dated 11/16/12.

ITEM NO. 1 – SHEET C1.0 **REPLACE** in its entirety.

ITEM NO. 2 – SHEET C1.1 **REPLACE** in its entirety.

ITEM NO. 3 – SHEET C1.2 **REPLACE** in its entirety.

ITEM NO. 4 – SHEET C2.0 **REPLACE** in its entirety.

ITEM NO. 5 – SHEET C2.1 **REPLACE** in its entirety.

ITEM NO. 6 – SHEET C2.2 **ADD** in its entirety.

ITEM NO. 7 – SHEET C3.0 **REPLACE** in its entirety.

ITEM NO. 8 – SHEET C3.1 **REPLACE** in its entirety.

ITEM NO. 9 – SHEET C3.2 **REPLACE** in its entirety.

ITEM NO. 10 – SHEET A1.1 **REPLACE** in its entirety.

ITEM NO. 11 – SHEET A1.2 **REPLACE** in its entirety.

ITEM NO. 12 – SHEET A2.1.1 **REPLACE** in its entirety.

ITEM NO. 13 – SHEET A2.1.2 **REPLACE** in its entirety.

ITEM NO. 14 – SHEET A2.2.1 **REPLACE** in its entirety.

ITEM NO. 15 – SHEET A2.2.2 **REPLACE** in its entirety.

ITEM NO. 16 – SHEET A2.4.1 **REPLACE** in its entirety.

ITEM NO. 17 – SHEET A3.1.1 **REPLACE** in its entirety.

ITEM NO. 18 – SHEET A3.1.2 **REPLACE** in its entirety.

ITEM NO. 19 – SHEET A3.2.1 **REPLACE** in its entirety.

ITEM NO. 20 – SHEET A3.2.2 **REPLACE** in its entirety.

ITEM NO. 21 – SHEET A3.2.3 **REPLACE** in its entirety.

ITEM NO. 22 – SHEET A3.3.2 **REPLACE** in its entirety.

ITEM NO. 23 – SHEET A4.1.1 **REPLACE** in its entirety.

ITEM NO. 24 – SHEET A4.1.2 **REPLACE** in its entirety.

ITEM NO. 25 – SHEET A4.2.1 **REPLACE** in its entirety.

ITEM NO. 26 – SHEET A4.2.2 **REPLACE** in its entirety.

ITEM NO. 27 – SHEET A5.1.2 **REPLACE** in its entirety.

ITEM NO. 28 – SHEET A5.1.3 **REPLACE** in its entirety.

ITEM NO. 29 – SHEET A5.2.2 **REPLACE** in its entirety.

ITEM NO. 30 – SHEET A6.1.1 **REPLACE** in its entirety.

ITEM NO. 31 – SHEET A6.1.2 **REPLACE** in its entirety.

ITEM NO. 32 – SHEET A7.1 **REPLACE** in its entirety.

ITEM NO. 33 – SHEET A7.2 **REPLACE** in its entirety.

ITEM NO. 34 – SHEET A8.1.1 **REPLACE** in its entirety.

ITEM NO. 35 – SHEET A9.1.1 **REPLACE** in its entirety.

ITEM NO. 36 – SHEET A9.2.1 **REPLACE** in its entirety.

ITEM NO. 37 – SHEET A10.1.1 **REPLACE** in its entirety.

ITEM NO. 38 – SHEET A10.1.2 **REPLACE** in its entirety.

ITEM NO. 39 – SHEET A10.2.1 **REPLACE** in its entirety.

ITEM NO. 40 – SHEET A10.2.2 **REPLACE** in its entirety.

ITEM NO. 41 – SHEET A10.3.1 **REPLACE** in its entirety.

ITEM NO. 42 – SHEET A11.1 **REPLACE** in its entirety.

ITEM NO. 43 – SHEET A11.3 **REPLACE** in its entirety.

ITEM NO. 44 – SHEET A11.4 **REPLACE** in its entirety.

ITEM NO. 45 – SHEET A11.5.1 **REPLACE** in its entirety.

ITEM NO. 46 – SHEET A11.5.2 **REPLACE** in its entirety.

ITEM NO. 47 – SHEET A11.6.1 **REPLACE** in its entirety.

ITEM NO. 48 – SHEET A11.6.2 **REPLACE** in its entirety.

ITEM NO. 49 – SHEET A11.6.3 **REPLACE** in its entirety.

ITEM NO. 50 – SHEET A11.7.1 **REPLACE** in its entirety.

ITEM NO. 51 – SHEET A11.7.2 **REPLACE** in its entirety.

ITEM NO. 52 – SHEET A11.8.1 **REPLACE** in its entirety.

ITEM NO. 53 – SHEET A11.10 **REPLACE** in its entirety.

ITEM NO. 54 – SHEET A11.11 **REPLACE** in its entirety.

ITEM NO. 55 – SHEET A11.12 **REPLACE** in its entirety.

ITEM NO. 56 – SHEET A11.13.1 **REPLACE** in its entirety.

ITEM NO. 57 – SHEET A11.13.2 **REPLACE** in its entirety.

ITEM NO. 58 – SHEET A11.13.3 **REPLACE** in its entirety.

ITEM NO. 59 – SHEET A12.2 **REPLACE** in its entirety.

ITEM NO. 60 – SHEET A12.7.1 **REPLACE** in its entirety.

ITEM NO. 61 – SHEET A12.9.2 **REPLACE** in its entirety.

ITEM NO. 62 – SHEET A12.11 **REPLACE** in its entirety.

ITEM NO. 63 – SHEET A 12.12 **REPLACE** in its entirety.

ITEM NO. 64 – SHEET A13.5 **REPLACE** in its entirety.

ITEM NO. 65 – SHEET A13.6 **REPLACE** in its entirety.

ITEM NO. 66 – SHEET S1.3 **REPLACE** in its entirety.

ITEM NO. 67 - SHEET S1.4 **REPLACE** in its entirety.

ITEM NO. 68 - SHEET S1.6 **REPLACE** in its entirety.

ITEM NO. 69 - SHEET S2.1 **REPLACE** in its entirety.

ITEM NO. 70 - SHEET S2.2 **REPLACE** in its entirety.

ITEM NO. 71 - SHEET S2.3 **REPLACE** in its entirety.

ITEM NO. 72 - SHEET S2.4 **REPLACE** in its entirety.

ITEM NO. 73 - SHEET S2.5 **REPLACE** in its entirety.

ITEM NO. 74 - SHEET S3.0 **REPLACE** in its entirety.

ITEM NO. 75 – SHEET M2.1 **REPLACE** in its entirety.

ITEM NO. 76 – SHEET M2.2 **REPLACE** in its entirety.

ITEM NO. 77 – SHEET P2.2 **REPLACE** in its entirety.

ITEM NO. 78 – SHEET P2.4 **REPLACE** in its entirety.

ITEM NO. 79 – SHEET P2.5 **REPLACE** in its entirety.

ITEM NO. 80 – SHEET P3.0 **REPLACE** in its entirety.

ITEM NO. 81 – SHEET E1.0 **REPLACE** in its entirety.

ITEM NO. 82 – SHEET E2.0 **REPLACE** in its entirety.

ITEM NO. 83 – SHEET E2.1 **REPLACE** in its entirety.

ITEM NO. 84 – SHEET E2.2 **REPLACE** in its entirety.

ITEM NO. 85 – SHEET E2.4 **REPLACE** in its entirety.

ITEM NO. 86 – SHEET E2.5 **REPLACE** in its entirety.

ITEM NO. 87 – SHEET E2.6 **REPLACE** in its entirety.

ITEM NO. 88 – SHEET E4.0 **REPLACE** in its entirety.

ITEM NO. 89 - SHEET L2.1 **REPLACE** in its entirety.

ITEM NO. 90 - SHEET L2.2 **REPLACE** in its entirety.

ITEM NO. 91 - SHEET L3.1 **REPLACE** in its entirety.

ITEM NO. 92 - SHEET L3.2 **REPLACE** in its entirety.

ITEM NO. 93 - SHEET L4.1 **REPLACE** in its entirety.

Warren H. W. Lee, P.E., Director
Department of Public Works
County of Hawai'i

Date Issued: November 20, 2012

Please detach and execute the receipt below. Return immediately via facsimile (808) 961-8630 or mail to the Administration Office, Department of Public Works, County of Hawai'i at Aupuni Center, 101 Pauahi Street, Suite 7, Hilo, HI 96720-4224.

Receipt of Addendum No. 1 via website for the EDITH KANAKA'OLE MULTI-PURPOSE STADIUM BUILDING ADDITION & IMPROVEMENTS, Job No. PR-4166, South Hilo, Hawai'i, is hereby acknowledged.

Signed_____ Title_____

Firm_____ Date_____

PRE-BID CONFERENCE

EDITH KANAKA'OLE MULTI-PURPOSE STADIUM
BUILDING ADDITION & IMPROVEMENTS
JOB NO. PR-4166

November 14 – 8:00 am
Department of Parks and Recreation Conference Room, Room 603
101 Pauahi Street; Hilo, Hawai'i 96720

AGENDA

PART ONE – OPENING

I. INTRODUCTIONS

A. Owner: ..... County of Hawai'i, Department of Parks and Recreation
Director: Bob Fitzgerald; Deputy Director: Clayton Honma

B. Owner's Rep.: ..... County of Hawai'i, Department of Parks and Recreation
James Komata, Park Planner Project: 961-8311(w)/936-8681(c)
jkomata@co.hawaii.hi.us

C. Project Management:... County of Hawai'i, Department of Parks & Recreation
Aubrey Summers, Project Manager: 961-8917(w)
asummers@co.hawaii.hi.us

D. Prime Consultants: ..... Fleming & Associates, LLC
(No direct contact by bidders allowed)

E. Sign-in Sheet..... see attached

F. Self Introductions by all attendees

II. CONFERENCE REQUIREMENTS (§3-122-16.05, Hawai'i Administrative Rules)

A. Attendance of the pre-bid conference is not mandatory and is not a prerequisite for submitting a bid on the project.
B. The purpose of the pre-bid conference is to explain the procurement requirements of this project and to allow potential offerors to ask questions. [§3-122-16.05(a), HAR]
C. Nothing stated at the pre-bid conference shall change the terms/conditions of the written solicitation unless corresponding change is implemented via a properly issued addendum. [§3-122-16.05(e), HAR]
D. A summary of the pre-bid conference, in addition to any changes to this solicitation, shall be issued by addendum. [§3-122-16.05(f), HAR]

PART TWO – PROJECT INFORMATION

I. SCOPE OF WORK
- A. Project Location: Ho'olulu Complex, 350 Kalanikoa Street, South Hilo, TMK (3)2-2-033:001
- B. Site Layout
  Site is within the Ho'olulu Complex.
- C. County's Cost Estimate: $2,000,000.00

II. PROJECT TIMEFRAMES:
- A. Commencement Date: ..... December 17, 2012
- B. Completion Date: ..... March 15, 2013 (NO EXTENSIONS)

III. PERMITTING
- A. Building Permit: In process
- B. Grading Permit: Responsibility of contractor/subcontractors to apply for and obtain, no cost
- C. Plumbing permit: General Contractor will have to apply for and obtain; no cost
- D. Electrical permit: General Contractor will have to apply for and obtain; no cost
- E. Work within the County Right of Way: If required, General Contractor will have to apply for and obtain

PART THREE – BIDDING INFORMATION

I. BID DOCUMENTS
- A. Available for examination at:
  1. Hilo: DPW's Admin. Office; Aupuni Center, Suite 7; and
  2. Kailua-Kona: DPW's Building Division Office, West Hawai'i Civic Center, Bldg. E, 1st Floor, 74-5044 Ane Keohokalole Highway
- B. One (1) initial CD containing the the following documents may be obtained at DPW's Admin. Office in Hilo at no charge to each company/party. Additional CDs available at a charge of $25 each. CDs may be picked up in person (Aupuni Center, 101 Pauahi Street, Suite 7) or call DPW (phone number) to request a mailed CD.
  1. Plans and Specifications (pdf format)
  2. General Requirements & Covenants, COH, DPW, July 1972 (pdf format)
  3. Standard Specifications for Public Works Construction, September 1986 (pdf format)
  4. Standard Details for Public Works Construction, September 1984 (available in hard copy from DPW)
- C. Addenda:
  1. If and when issued, will only be available on the State Procurement Office's website (http://spo3.hawaii.gov/notices/notices)
  2. None issued to date
  3. Pending
     a. Minutes of Pre-Bid Conference
     b. Spec and drawing clarifications

II. PROJECT TECHNICAL REQUIREMENTS:
- A. Section 01010 – SUMMARY OF WORK
  1. Paragraph 1.05.B – Examination of Premises
  2. Paragraph 1.05.C – Conditions at Site
  3. Paragraph 1.05.O - Barricades
- B. Section 01040 – COORDINATION
  1. Portable luas

C. Section 01050 – CONSTRUCTION PROGRESS ADMINISTRATION
   1. Paragraph 1.04.A – Submittals Schedule (required not later than 15 days after contract award)
   2. Paragraph 1.04.B – Construction Schedule (required not later than 15 days after contract award)
   3. Paragraph 1.04.C – Schedule of Values (required not later than 5 days after bid opening)
   4. Paragraph 1.04.D – Contractor's Daily Activity Reports (required with each invoice)
   5. Paragraph 1.04.E – Statements of Compliance and Certified Payrolls (required with each invoice)
   6. Paragraph 1.04.F – Invoices and Applications for Payment (required not later than 15 days after contract award)
   7. Paragraph 1.04.G – Insurance Costs/Rates (required not later than 15 days after contract award)
   8. Paragraph 1.04.H – Proof of Authorization (required not later than 15 days after contract award)

D. Section 01715 – EXISTING CONDITIONS
   1.Contact Aubrey Summers to schedule a walkthrough asummers@co.hawaii.hi.us

E. Special Inspections – Required per plans

III. CRITICAL DATES:

A. Bid Advertisement: .....November 5, 2102 ..... via State Procurement Website
B. Substitution Requests: .....November 15, 2012 ..... due not later than 14 calendar days prior to Bid Opening
C. Certification for Hawai'i
   Product Preference: .....November 19, 2012 ..... absolute date
D. Intent To Bid: .....November 19, 2012 ..... due not later than 10 calendar days prior to Bid Opening
E. SQQO Form:.....November 27, 2012 ..... due not later than 48 hours prior to Bid Opening
F. Bid Opening: .....November 29, 2012, 2:00pm at DPW's Hilo Admin. Office and Kona Building Division

IV. CONTRACTOR LICENSING:

A. Bidder's Licensing Requirements: Bidders must be a properly licensed general engineering contractor "B" to submit a bid on this project.
B. The pre-bid conference shall be the only venue in which the minimum subcontractor licensing listing requirements for the project will be formally discussed, and if necessary, modified. Failure to attend the pre-bid conference shall be evidence that the bidder/offeror has opted to not provide input on the listing and waive all future rights to protest the requirement resulting there from.
C. Okada Trucking Co., Ltd. v. Board of Water Supply et.al, 97 Haw. 450 (2002)
   1. "A" and "B" contractors are reminded that they are prohibited from undertaking any work, solely or as part of a larger project, which would require the general contractor to act as a specialty contractor in any area where the general contractor has no license.
   2. Although the "A" and "B" licensed contractors may act as the prime contractor, they may only perform work in the areas they have the appropriate specialty contractor classifications, either individually earned or automatically held, and the remaining work must be performed by appropriately licensed entities.
D. Specialty Contractor Classification Requirements:
   1. Special Notice to Bidders
   2. Additional "C" licensed entities may be added at the Contractor's discretion.

V. POST-BID REQUIREMENTS

A. Schedule of Values
   1. Required to be submitted by the apparent low bidder within five (5) days of bid opening
      Critical for determination of and assignment of funding from differing sources
   2. SOV General Notes
   3. SOV Line Items

B. Subcontractor Agreements
   1. Required to be submitted by the apparent low bidder within five (5) days of bid opening – critical for verification of subcontractor listing
C. Execution of Contract & Furnish Bond
   1. Within ten (10) days of notice of award
D. Proof of Certification and Compliance Submitted with Bid [SNTB]
   1. Submittal of all such proof required of apparent low bidder within five (5) days of bid opening

VI. LIQUIDATED DAMAGES [Special Provisions 8.11]
A. Determined to be $500.00 per consecutive calendar day delay [Proposal]
B. LD for failure to complete portions of the work with predetermined time constraints: 100%
C. LD for failure to complete the punch list: 50%
D. The Department is resolute in enforcing and implementing LD provisions of all its construction contracts, including this one.

VII. REQUESTS FOR INFORMATION/CLARIFICATION (RFI/RFC)
A. All RFIs/RFCs shall be submitted, in written form, to:

Attn: **Aubrey Summers, Park Projects Manager**
Subject: **Request for Information/Clarification**

Via one of the following methods:

Fax: (808)961-8411
Email: asummers@co.hawaii.hi.us
Mail: 101 Pauahi Street, Suite 6, Hilo, Hawai‘i 96720

B. Verbal requests for information or clarification will not be entertained whatsoever

VIII. QUESTIONS/DISCUSSION

Questions regarding access will be reviewed and address in Addendum 2.

PART FOUR –TECHNICAL BIDDING INFORMATION

I. SPECIALTY CONTRACTOR CLASSIFICATIONS:
A. Special Instructions to Bidders Regarding Specialty Contractor Classifications and Regarding Joint Contractors and Subcontractors [Special Notice To Bidders]
   1. Note 1: Bidder familiarity with specialty contractor classifications
   2. Note 2: Plausible alternative means and methods
   3. Note 3: Self-listing of Bidder required for automatically held “C” licenses
   4. Note 4: Overlapping scopes of specialty contractor classifications
   5. Note 5: Use of multiple entities under a specific specialty contractor classification
   6. Note 6: Listing requirements of joint contractors, subcontractors, lower-tier subcontractors and detailed division of work
   7. Note 7: Bidder responsible for validity of its listed joint contractors, subcontractors and lower-tier subcontractors for duration of bid and award process
B. Form [Proposal]

II. BID PREFERENCES:

A. Hawai‘i Product Preference [§103D-1002, HRS] [Special Provisions 10(A)]
   1. Hawai‘i Product Preference is applicable to this bid
   2. Bidders intending to include in their bid products that are not on the SPO’s website are directed to the section of these specifications entitled “Notice to Providers and Prospective Providers of Hawai‘i Products”
   3. Schedule of Hawai‘i Product Preference Claims [Proposal] must be filled in accurately and completely and submitted with bid to earn the allowable preferences

B. Hawai‘i Apprenticeship Preference, “aka” Act 17, SLH 2009 [§103-55.6, HRS]
   [Special Provision 10(B)]
   1. Preference shall be in the form of a 5% bid adjustment applied to the Bidder’s bid amount
   2. Bidder’s seeking this preference shall: [Proposal]
      a. Be a party to an apprenticeship program registered with the State DLIR at the time of its bid for each apprenticeable trade the Bidder will employ to construct this project; and
      b. Completely fill-in the Schedule of Apprenticeable Trades table attesting to the trades the Bidder will employ to perform the work of this project; and
      c. For each apprenticeable trade the Bidder will employ on this project, submit with its bid fully executed DLIR Form 1s; and
      d. Fully execute the Hawai‘i Apprenticeship Preference certification.
   3. Apprenticeable Trades Listing - DLIR
   4. State Comptroller’s Memo No. 2010-29
      a. Employer-Employee Relationship
      b. Subcontractors not required
      c. Maintenance of registration for project duration
      d. DLIR Form 2
      e. Monthly certification

III. COUNTY FURLOUGH DAYS

IV. PROJECT STATUTORY REQUIREMENTS:

A. State Wage Rates

B. Act 68 [25th Hawai‘i State Legislature, S.B. 2840]
   1. State Comptroller’s Memo No. 2010-36 and No. 2010-38
   2. Employment of State Residents on Construction Procurement Contracts; requires Hawai‘i residents compose not less than 80% of the workforce employed to perform the contract work on the project. Calculated monthly by hours worked and includes the work of all subcontractors; excludes the work of employees in shortage trades, as determined by DLIR.
   3. Applicable to the Prime Contractor’s contract, regardless of cost
   4. Applicable, individually and separately, to all subcontracts of $50,000 or more
   5. Monthly certification by the Contractor and applicable subcontractors (if any) required
   6. Certified Payrolls – attest to which payrollee is a Hawai‘i Resident, per Act 68
   7. Statement of Compliance – Certified Payrolls: attest to verification of Hawai‘i Resident status, per Act 68
   8. Certification of Compliance for Employment of State Residents, Act 68

V. QUESTIONS/DISCUSSION

VI. CLOSING/ADJOURNMENT

Edith Kanakaole Multi-Purpose Stadium Building Addition & Improvements
Job No. PR-4166
Wednesday, November 14, 2012 at 8:00 a.m.
Aupuni Center
Department of Parks and Recreation
Aupuni Center
101 Pauahi Street, Suite 6
Hilo, HI 96720-4224
Pre-Bid Conference Attendance Sheet

Name	Organization	Address	Telephone	Fax No.	Email Address
DAVE HARAGUCHI	IDEMOTO CONTRACTING	[redacted]			
Sylvia Nagai	Constructors Hawaii				
EDWARD FUJIOKA	A/A LECTRICIAN				

TABLE OF CONTENTS

TECHNICAL SPECIFICATIONS

SECTION 01715 – EXISTING CONDITIONS – HAZARDOUS MATERIALS SURVEY

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes the results of the Department's survey for hazardous materials and is provided for the Contractor's information.

B. Related Sections include the following

1. SECTION 13281 – REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING MATERIALS for requirements of all work that disturbs asbestos containing materials.

2. SECTION 13282 – LEAD-CONTAINING PAINT CONTROL MEASURES for requirements of all work that disturbs Lead-Containing Paint.

3. SECTION 13284 – REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYL (PCB)-CONTAINING LIGHT BALLASTS AND MERCURY CONTAINING LAMPS for requirements of all work that disturbs Polychlorinated Biphenyl (PCB) Light Ballasts and /or Mercury Lamps.

4. SECTION 13288 – TESTING/AIR MONITORING for Contractor's responsibilities for air monitoring and testing while conducting work which disturb Lead Containing Paint (LCP) and/or Asbestos Containing Materials (ACM)

5. Appendix 3 –
Report *titled HAZARDOUS MATERIALS SURVEY REPORT FOR HO'OLULU EDITH KANAKA'OLE MULTI-PURPOSE FACILITY, 350 KALANIKOA STREET, HILO, HI (99 pages), prepared by Myounghee Noh & Associates and dated November 13, 2009.*

1.02 ASBESTOS CONTAINING MATERIAL

A. The structures to be demolished, repaired, renovated, altered, repaired or supplemented under this contract have been surveyed for the presence of asbestos containing materials (ACM). A copy of the initial survey report, as well as any subsequent supplemental survey reports if performed are included in the Section. If there is ACM outside of the areas in which work will be performed, this ACM shall not be disturbed in any way.

The report(s) is (are) included for the Contractor's information.

Review the attached report(s) for the basis on which any and all negative ACM finding(s) was (were) made. Contractor shall perform further surveys at its own expense if the status of any suspected-ACM is not represented and a conclusion made in the report(s) where said suspected-ACM is in the areas in which work will be performed or can reasonably assumed may be impacted by the work. If ACM is found, notify the authorized representative of the Director immediately. Copies of all such additional surveys shall be provided to the Director immediately upon its completion.

B. In the event that, by way of the contractor's means/methods, work is required in any area on the site other than those designated in the Project's scope and is allowed by the Director, the Contractor shall request copies of the asbestos survey reports for each such area from the Director. Based on the information contained in the additional survey(s), notify all persons on the project as indicated in paragraph 1.02 B. In the absence of such reports or if the reports that are available are insufficient for the Contractor's purposes, the Contractor shall perform further surveys at its own expense. Copies of all such surveys shall be provided to the Director immediately upon its completion.

C. Conduct work in accordance with the requirements of Title 12 (Department of Labor and Industrial Relations), Subtitle 8 (Division of Occupational Safety and Health), Part 3 (Construction Standards), Chapter 145.1 (Asbestos), Hawaii Administrative Rules.

1.03 ARSENIC CONTAINING MATERIALS

A. The structures to be demolished, repaired, renovated, altered, repaired or supplemented under this contract have been surveyed for the presence of Arsenic. A copy of the initial survey report, as well as any subsequent supplemental survey reports if performed are included in the Section. If there is Arsenic outside of the areas in which work will be performed, this Arsenic shall not be disturbed in any way.

The report(s) is(are) included for the Contractor's information even when no Arsenic was found.

The Contractor shall review the attached lead testing data which identifies the locations Arsenic was found and ensure that it and all of its employees and subcontractors understand the contents of the report referring to areas in which work is to be performed. Review the attached report(s) for the basis on which any and all negative Arsenic finding(s) was(were) made. Contractor shall perform further surveys at its own expense if the status of any suspected-Arsenic containing building material is not represented and a conclusion made in the report(s) where said suspected-Arsenic containing building material is in the areas in which work will be performed or can reasonably assumed may be impacted by the work. If Arsenic is found, notify the authorized representative of the Director immediately. Copies of all such additional surveys shall be provided to the Director immediately upon its completion.

B. In the event that, by way of the contractor's means/methods, work is required in any area on the site other than those designated in the Project's scope and is allowed by the Director, the Contractor shall request copies of the asbestos survey reports for each such area from the Director. Based on the information contained in the additional survey(s), notify all persons on the project as indicated in paragraph 1.02 B. In the absence of such reports or if the reports that are available are insufficient for the Contractor's purposes, the Contractor shall perform further surveys at its own expense. Copies of all such surveys shall be provided to the Director immediately upon its completion.

C. Conduct work in accordance with the requirements of Title 29 (Code of Federal Regulations), Part Number 10 (Occupational Safety and Health Standards), Standard Number 1910.1018 (Inorganic Arsenic).

D. The Contractor shall review the attached lead testing data which identifies the locations Arsenic was found and ensure that it understands the contents of the report referring to areas in which work is to be performed.

The Contractor shall notify its employees, subcontractors and all other persons engaged in the demolition and renovation work of the presence of Arsenic containing materials.

1.04 LEAD CONTAINING PAINT

A. The structures to be demolished, repaired, renovated, altered, repaired or supplemented under this contract have been surveyed for the presence of Lead Containing Paint (LCP). A copy of the initial survey report, as well as any subsequent supplemental survey reports if performed are included in the Section. If there is LCP outside of the areas in which work will be performed, this LCP shall not be disturbed in any way.

The report(s) is(are) included for the Contractor's information even when no LCP was found.

The Contractor shall review the attached lead testing data which identifies the locations LCP was found and ensure that it and all of its employees and subcontractors understand the contents of the report referring to areas in which work is to be performed. Review the attached report(s) for the basis on which any and all negative LCP finding(s) was(were) made. Contractor shall perform further surveys at its own expense if the status of any suspected-LCP is not represented and a conclusion made in the report(s) where said suspected-LCP is in the areas in which work will be performed or can reasonably assumed may be impacted by the work. If LCP is found, notify the authorized representative of the Director immediately. Copies of all such additional surveys shall be provided to the Director immediately upon its completion.

B. In the event that, by way of the contractor's means/methods, work is required in any area on the site other than those designated in the Project's scope and is allowed by the Director, the Contractor shall request copies of the asbestos survey reports for each such area from the Director. Based on the information contained in the additional survey(s), notify all persons on the project as indicated in paragraph 1.02 B. In the absence of such reports or if the reports that are available are insufficient for the Contractor's purposes, the Contractor shall perform further surveys at its own expense. Copies of all such surveys shall be provided to the Director immediately upon its completion.

C. Conduct work in accordance with the requirements of Title 12 (Department of Labor and Industrial Relations), Subtitle 8 (Division of Occupational Safety and Health), Chapter 148.1 (Lead), Hawaii Administrative Rules.

D. The Contractor shall review the attached lead testing data which identifies the locations LCP was found and ensure that it understands the contents of the report referring to areas in which work is to be performed. The Contractor shall also understand that all testing was for design purposes only and **does not satisfy** the requirements of HIOSH Chapter 12-148.1.

1.05 MISCELLANEOUS HAZARDOUS MATERIALS

A. The structures to be demolished, repaired, renovated, altered, repaired or supplemented under this contract may have been surveyed for the presence of various types of hazardous

materials that were reasonably suspected to exist thereat at the time the survey was completed. A copy of the initial survey report, as well as any subsequent supplemental survey reports if performed are included in the Section. If there are other types of hazardous materials in the areas in which work will be performed, they shall not be disturbed in any way and necessary precautionary measures shall be employed to ensure that all applicable regulatory requirements are complied with at all times.

The report(s) is(are) included for the Contractor's information even when no hazardous materials were found.

The Contractor shall review the attached report(s) that identify(ies) the location(s) hazardous materials was(were) found and ensure that it and all of its employees and subcontractors understand the contents of the report referring to areas in which work is to be performed. Review the attached report(s) for the basis on which any and all negative finding(s) was(were) made. Contractor shall perform further surveys at its own expense if the status of any suspected-hazardous material(s) is(are) not represented and a conclusion made in the report(s) where said suspected-hazardous material(s) is(are) in the areas in which work will be performed or can reasonably assumed may be impacted by the work. If additional hazardous material is(are) found, notify the authorized representative of the Director immediately. Copies of all such additional surveys shall be provided to the Director immediately upon its completion.

1.06 REGULATORY REQUIREMENTS

The Contractor shall comply with all applicable federal, state and project laws, rules, regulations and requirements in the performance of its work where hazardous materials are anticipated or known to be encountered, disturbed, or otherwise impacted by the scope of project and/or the means and methods intended to be employed in connection therewith. The following references are provided for particular emphasis of the Bidder/Contractor in the preparation of its bid and execution of the contracted work and is not intended to be all-inclusive.

A. Hawai‘i Administrative Rules, Title 12(Department of Labor and Industrial Relations), Subtitle 8 (Division of Occupational Safety and Health), Part 3 (Construction Standards), Chapter 110 (General Safety and Health Requirements):

1. §12-110-2(b)(4)(A): The Contractor shall notify its employees engaged in the work of this Project of the presence of all/any hazardous materials (ACM, LCP, Arsenic, etc.), develop and institute a safety and health training program for its employees and implement procedures and practices to protect its employees from all hazards.

2. §12-110-2(f)(1): The Contractor shall notify its subcontractors engaged in the work of this Project of the presence of all/any hazardous materials (ACM, LCP, Arsenic, etc.) and assumes all obligations required thereby.

3. §12-110-2(f)(2): All subcontractors have the independent responsibility for conformance with all occupational safety and health for the subcontractors' operations.

PART 2 - PRODUCTS

2.01 SURVEY (attached)

The following hazardous materials survey(s) is(are) attached for the Contractor's use in preparation of its bid and in executing the contracted scope of work. The report is provided in PDF format on CD or DVD; no hardcopy will be provided.

Report *titled HAZARDOUS MATERIALS SURVEY REPORT FOR HO'OLULU EDITH KANAKA'OLE MULTI-PURPOSE FACILITY, 350 KALANIKOA STREET, HILO, HI (99 pages), prepared by Myounghee Noh & Associates and dated November 13, 2009.*

2.02 SURVEY DISCLAIMER

The attached hazardous materials survey(s) is(are) provided strictly for the Contractor's and subcontractor's use in successful execution of this scope of work of this Project. The reports, including their findings, assumptions, methodologies, applications, etc., shall not be reused by anyone on subsequent projects at this or any other Project.

PART 3 - EXECUTION

(Not used)

END OF SECTION

SECTION 13281 - REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING MATERIALS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

As specified in Section 01010 - GENERAL REQUIREMENTS.

1.02 SUMMARY

This section specifies the Contractors requirements when disturbing asbestos-containing materials (ACM). Contractor shall refer to and understand the hazardous material survey report and verify the locations and quantities of ACM that will be removed as part of the planned modifications and realated activities. Asbestos was found in various building materials. Contractor shall ensure that all employees and subcontractors involved in disturbing or removing hazardous materials have access to the survey report and the specifications and control the asbestos hazards.

1.03 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only. Federal requirements which govern asbestos abatement work or hauling and disposal of asbestos waste materials include, but are not limited to the following:

A. OSHA: U.S. Department of Labor, Occupational Safety and Health Administration, including but not limited to:

1. Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite: Final Rules - Title 29, Part 1910, Section 1018 and Title 29, Part 1926, Section 1018 of the Code of Federal Regulations

2. Respiratory Protection: Title 29, Part 1910, Section 134 of the Code of Federal Regulations

3. Access to Employee Exposure and Medical Records: Title 29, Part 1910, Section 2 of the Code of Federal Regulations

4. Hazard Communication: Title 29, Part 1910, Section 1200 of the Code of Federal Regulations

5. Specifications for Accident Prevention Signs and Tags: Title 29, Part 1910, Section 145 of the Code of Federal Regulations

B. DOT: U.S. Department of Transportation, including but not limited to: Hazardous Substances; Title 29, Parts 171 & 172 of the Code of Federal Regulations.

C. EPA: U. S. Environmental Protection Agency (EPA), including but not limited to:

1. Asbestos Abatement Projects: Worker Protection Rule Title 40 Part 763, Sub-part G of the Code of Federal Regulations

2. Asbestos Hazard Emergency Response Act (AHERA) Regulation Asbestos Containing Materials in Schools: Final Rule & Notice Title 40, Part 763, Sub-part E of the Code of Federal Regulations

3. Training Requirements of AHERA: Title 40, Part 763, Sub-part E, Appendix C of the Code of Federal Regulations

4. National Emission Standard for Hazardous Air Pollutants (NESHAPS) Standard for Asbestos: Title 40, Part 61, Sub-part A, and Sub-part M (Revised Sub-part B) of the Code of Federal Regulations

D. State of Hawaii: Which govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

1. HIOSH - Construction Industry for Asbestos - Title 12, Subtitle 8, Chapter 145

2. HIOSH - Respirator Protection - Title 12, Subtitle 8, Chapter 145-5

3. HIOSH - Access to Medical Records - Title 12, Subtitle 8, Chapter 145-12

4. HIOSH - Hazard Communication - Title 12, Subtitle 8, Chapter 145-3

E. Local Requirements: Comply with all local requirements which govern asbestos abatement work or hauling and disposal of asbestos waste materials.

1.04 STANDARDS

Standards which apply to asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

A. American National Standards Institute (ANSI), Broadway, New York, New York 10018

B. Fundamentals Governing the Design and Operation of Local Exhaust Systems Publication Z9.2-79

C. Practices for Respiratory Protection Publication Z88.2-80

D. American Society for Testing and Materials (ASTM) Race Street Philadelphia, PA 19103

E. Safety and Health Requirements Relating to Occupational Exposure to Asbestos E 849-82

F. Standard Practice for Visual Inspection of Asbestos Abatement Projects E1368-90

G. Specification for Encapsulants for Friable Asbestos Containing Building Materials Proposal P-189

1.05 DEFINITIONS

A. Amended Water: Water containing a wetting agent or Surfactant.

B. Area Monitoring: Sampling of asbestos fiber concentrations within the asbestos control area and outside the asbestos control area, which is representative of the airborne concentrations of asbestos fibers which may reach the breathing zone of personnel potentially exposed to asbestos.

C. Asbestos: A group of naturally occurring minerals that separate into fibers. There are six asbestos minerals used commercially: chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

D. Asbestos Control Area: An area where asbestos removal operations are preformed which is isolated by physical boundaries to prevent unauthorized entry of personnel and to prevent the spread of asbestos dust, fibers, or debris.

E. Asbestos Fibers: Asbestos fibers having a length to diameter ratio of at least 3:1 and longer than 5 micrometers.

F. Asbestos Permissible Exposure Limit: The limit is 0.1 fibers (longer than 5 micrometers) per cubic centimeter of air as an 8-hour time weighted average as determined by Appendix A of 29 CFR 1926.1101.

G. Friable Asbestos Material: Material that contains more than one percent asbestos by weight which can be crumbled, pulverized, or reduced to powder by hand pressure when dry. Friable asbestos material is considered hazardous during removal and disposal procedures.

H. HEPA Filter Equipment: High efficiency particulate air (HEPA) filtered vacuuming equipment with a UL 586 filter system capable of collecting and retaining asbestos fibers. Filters shall be 99.97 percent efficiency for retaining fibers of 0.3 micrometers or larger.

I. Industrial Hygienist (IH): The IH shall be assigned to the site for the duration of the project with functional responsibility for implementation and enforcement of the Asbestos Removal & Disposal Plan, including the air monitoring program and final clearance. The IH shall have minimum five years of experience in hazardous material abatement design. An IH Technician (IHT) may perform the onsite work under the supervision of the IH. The IHT shall have valid State of Hawaii Contractor/Supervisor and

Project Monitor certifications. The IHT shall have a minimum of one (1) year working experience in the asbestos abatement work and shall have a sound working knowledge of applicable State and Federal Occupational Safety & Health regulations. The IHT shall also have demonstrable experience in asbestos air monitoring techniques and respiratory protection implementation.

J. Local Exhaust System: A system in which static pressure in an enclosed control area is lower than that of the environment outside the control area, as specified herein.

K. Nonfriable Asbestos Material: Material that contain asbestos in which the fibers have been locked in by a bonding agent, coating, binder, or other material so that the asbestos is well bound and may not release fibers in excess of the asbestos permissible exposure limit during any appropriate use, handling, storing, transporting, or processing. Nonfriable asbestos material may be hazardous during removal and disposal procedures.

L. Personal Monitoring: Sampling of asbestos fiber concentrations within the breathing zone of an employee to determine the 8-hour time weighted average in accordance with Appendix A of 29 CFR 1926.1101. The samples shall be representative of the employee's work tasks. The breathing zone shall be considered an area within 12 inches of the nose or mouth of an employee.

M. Removal Encapsulant: A manufactured asbestos penetrating encapsulant designed specifically for asbestos removal.

N. Surfactant (Wetting Agent): A chemical wetting agent added to water to improve penetration. The surfactant shall be 50/50 mixture of polyoxyethylene ether and polyoxyethylene ester, or equivalent, mixed in a proportion of one fluid ounce to 5 gallons of water or as specified by the manufacturer. An equivalent surfactant shall be understood to mean material with a surface tension of 29 dynes/cm as tested in accordance with ASTM D 1331.

O. Time Weighted Average (TWA): The TWA is an 8-hour time weighted average of airborne concentration of fibers (longer than 5 micrometers) per cubic centimeter of air which represents the employee's 8-hour workday as determined by Appendix A of 29 CFR 1926.1101.

1.06 DESCRIPTION OF WORK

Asbestos-containing materials were identified as indicated in the Hazardous Material Survey Report attached to the Section 01715 - EXISTING CONDITIONS - ASBESTOS/LEAD/HAZARDOUS MATERIAL SURVEY. The Contractor shall review and understand the survey report and verify the location and quantities of ACM to be removed prior to the planned modifications. Removal of the ACM shall be conducted prior to removal of non-asbestos containing materials. ACM removal is governed by 40 CFR 61, subpart M, National Emissions Standards for Hazardous Air Pollutants

(NESHAPS) and Hawaii Occupational Safety & Health (HIOSH) title 12, Subtitle 8, chapter 145.

1.07 SUBMITTALS

A. ACM Removal Plan: Submit a detailed job-specific plan of the work procedures that will minimize or generate the least amount of dust shall be employed in the removal and demolition of materials containing asbestos. The plan shall include clear scope of work, training and State of Hawaii certificates (worker & contractor/supervisor), medical evaluation, respiratory medical evaluation, emergency procedures, interface of trades involved in the construction, detailed sequencing of asbestos-related work, disposal plan, type of wetting agent or removal encapsulant to be used, respiratory protection program, personal protective equipment, and a detailed description of the method to be employed in order to control pollution. The plan shall be concurred by the County prior to the start of asbestos work. Prior to beginning work, the Contractor shall meet with the County to discuss in detail the ACM removal plan, including work procedures and safety precautions. Such plan shall include a sketch showing the location, size, and details of asbestos control areas, including clean and dirty areas, buffer zones, shower, storage areas, change rooms, and removal methods. The plan shall indicate the quantities of ACM to be removed.

B. Landfill: Submit written evidence that the landfill is approved for asbestos disposal by the State and local regulatory agencies. Within 3 working days after delivery, submit Hazardous Waste Manifest Form, prepared, signed, and dated by an agent of the landfill, certifying the amount of ACM delivered to the landfill.

C. Respirator Program: ANSI Z88.2 and 29 CFR 1910.134. Contractor shall submit a respiratory protection program and a list of workers who are qualified to wear respirators. Information shall also include date and type of fit testing and manufacturer and size of respirator.

D. Permits, Licenses, and Certificates: For the County's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, orrespondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work including:

1. Notices: Submit notices required by federal, state and local regulations together with proof of timely transmittal to agency requiring the notice.
2. Permits: Submit copies of current valid permits required by state and local regulations.
3. Licenses: Submit copies of all State and local licenses and permits necessary to carry out the work of this contract.

1.08 NOTICES

Send written notification as required by state and local regulations prior to beginning any work on ACM to the following:

Noise Radiation and IAQ Branch
Asbestos Office
591 Ala Moana Blvd., Rm. 212
Honolulu, HI 96813
Tel 586-5800; FAX 586-5811

1. Notification: Include the following information in the notification sent to the NESHAP contact:

   a. Indication of whether notification is original or a revised notification.

   b. Name and address of facility and operator and asbestos removal or operator.

   c. Description of the facility being demolished or renovated, including the size, age, and present and prior use of the facility.

   d. Type of operation: abatement or renovation

   e. Estimate of the approximate amount of asbestos material to be removed from the facility in terms of linear feet of pipe, and surface area and total estimated volume. For facilities in which the amount of asbestos material is less than 80 linear meters (260 linear feet) on pipes and less than 15 square meters (160 square feet) on other facility components, explain techniques of estimation. Estimate the amount of Category I and Category II nonfriable ACM that is located in the affected part of the facility but which is not being removed.

   f. Procedure and Analytical methods used to detect the presence of asbestos. Location of the facility being demolished or renovated (street address, room numbers, etc.)

   g. Scheduled starting and completion dates of abatement or renovation and any preparatory work that would disturb asbestos.

   h. Nature of planned abatement or renovation and method(s) to be used.

   i. Description of work practices and engineering controls.

   k. Procedures to be used to comply with the requirements of NESHAP Asbestos Regulations, 40 CFR 61 Subpart M.

   l. Name, telephone and address of waste transporter.

   m. Name and location of the waste disposal site where the friable asbestos waste material will be deposited.

   n. Certification that at least one person trained as required by NESHAP will supervise the operation.

o. For facilities being demolished under an order of a State or local governmental agency, issued because the facility is structurally unsound and in danger of imminent collapse, the name, title, and authority of the State or local government personnel who has ordered the abatement, date the order was issued, and date on which abatement was to begin. Attach a copy of the order.

p. Other requirements per NESHAP.

1.09 PERMITS AND LICENSES

Obtain and maintain current permits and licenses as required by applicable state or local jurisdictions for the removal, transporting, disposal or other regulated activity relative to the work of this contract.

PART 2 - PRODUCTS

2.01 MATERIALS

Asbestos Prohibition: No asbestos-containing materials or equipment shall be used in this section. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos-free.

2.02 WETTING MATERIALS

A. For wetting prior to disturbance of ACM, use either amended water or a removal encapsulant:

B. Amended Water: Provide water to which a surfactant has been added. Use a mixture of surfactant and water which results in wetting of the ACM and retardation of fiber release during disturbance of the material equal to or greater than that provided by the use of one ounce of a surfactant consisting of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with five gallons of water.

C. Removal Encapsulant: Provide a penetrating type encapsulant designed specifically for removal of ACM. Use a material which results in wetting of the ACM and retardation of fiber release during disturbance of the material equal to or greater than that provided by water amended with a surfactant consisting of one ounce of a mixture of 50% polyoxyethylene ester and 50% polyoxyethylene ether in five gallons of water.

2.03 POLYETHYLENE SHEET

Provide a single polyethylene film in the largest sheet size possible to minimize seams, 4 mil or 6 mil thick as indicated, clear, frosted, or black as indicated.

2.04 DUCT TAPE

Provide duct tape in 2” or a 3” width as needed, with an adhesive, which is formulated to stick aggressively to sheet polyethylene.

2.05 SPRAY ADHESIVE

Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

2.06 DISPOSAL BAGS

Provide 6 mil thick leak-tight polyethylene bags labeled as required.

2.07 SIGNS

A. Post an approximately 20 inch by 14 inch manufactured caution sign at each entrance to the Work Area displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926.1101.

LEGEND

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE
CLOTHING ARE REQUIRED IN THIS AREA

B. Provide spacing between respective lines at least equal to the height of the respective upper line.

C. Post an approximately 10 inch by 14 inch manufactured sign at each entrance to each Work Area displaying the following legend with letter sizes and styles of a visibility at least equal to the following:

LEGEND	NOTATION
NO FOOD, BEVERAGES OR TOBACCO PERMITTED	3/4” Block
ALL PERSONS SHALL DON PROTECTIVE CLOTHING (COVERINGS) BEFORE ENTERING THE WORK AREA	3/4” Block
ALL PERSONS SHALL SHOWER IMMEDIATELY AFTER LEAVING WORK AREA AND BEFORE ENTERING THE CHANGING AREA	3/4” Block

PART 3 - EXECUTION

3.01 EQUIPMENT

The Contractor shall ensure the use of a High Efficiency Particulate Air (HEPA) filter vacuuming equipment with a UL 586 filter system capable of collecting and retaining asbestos fibers vacuumed during the removal of the ACM.

3.02 AIR PURIFYING RESPIRATORS

A. Respirator Bodies: Provide half face or full face type respirators. Equip full face respirators with a nose cup or other anti-fogging device as would be appropriate for use in air temperatures less than 32 degrees fahrenheit.

B. Filter Cartridges: Provide, at a minimum, HEPA type filters labeled with NIOSH and MSHA Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mists including Asbestos-Containing Dusts and Mists" and color coded in accordance with ANSI Z228.2 (1980). In addition, a chemical cartridge section may be added, if required, for solvents, etc., in use. In this case, provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH/MSHA Certification.

C. Non-permitted respirators: Do not use single use, disposable or quarter face respirators.

D. Require that respiratory protection be used at all times that there is any possibility of disturbance of asbestos-containing materials whether intentional or accidental.

E. Require that a respirator be worn by anyone in a Work Area at all times, regardless of activity, during a period that starts with any operation which could cause airborne fibers until the area has been cleared for re-occupancy.

F. Regardless of Airborne Fibers: Require that the minimum level of respiratory protection used be half-face air-purifying respirators with high efficiency particulate air filters.

G. Do not allow the use of single-use, disposable, or quarter-face respirators for any purpose.

3.03 FIT TESTING

A. Initial Fitting: Provide initial fitting of respiratory protection during a respiratory protection course of training. Fit types of respirator to be actually worn by each individual. Allow an individual to use only those respirators for which training and fit testing have been provided.

B. On a Semi-Annual Basis: Check the fit of each worker's respirator by having irritant smoke blown onto the respirator from a smoke tube.

C. Upon Each Wearing: Require that each time an air-purifying respirator is put on it be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions or ANSI Z88.2 (1980).

3.04 TYPES OF RESPIRATORY PROTECTION NEEDED

A. Provide Respiratory Protection as indicated in paragraph below. Higher levels of protection may be provided as desired by Contractor, or as directed by the County. Where paragraph below does not apply, determine the proper level of protection by dividing the expected or actual airborne fiber count in the Work Area by the "protection factors" given below. The level of respiratory protection which supplies an airborne fiber level inside the respirator, at the breathing zone of the wearer, at or below 0.01 f/cc is the minimum level of protection allowed.

B. Use the following as a minimum unless air monitoring results indicate greater protection is necessary. Refer to Protection Factors table for choice of respirators.

1. Plastic installation which does not disturb asbestos-containing material: Half-face dual cartridge-type respirator.

2. Removing or cleaning items or plastic installation when such operation may disturb asbestos-containing material: Dual Cartridge, Half-face Air Purifying Respirators.

3. Asbestos containing material removal: Dual Cartridge, Half-face Air Purifying Respirators.

4. Gross clean of removal area(s): Dual Cartridge, Half-face Air Purifying Respirators.

5. Final wet-cleaning of area until final air tests show exposure inwork areas to be below 0.01 f/cc: Dual Cartridge, Half-face Air Purifying Respirators.

6. Loading and unloading drums on truck (outside work area): Dual Cartridge, Half-face Air Purifying Respirators.

C. Fibers: For purposes of this section fibers are defined as all fibers regardless of composition as counted in the OSHA Reference Method, NIOSH Method 7400 procedure, or asbestos fibers of any size as counted using either a scanning or transmission electron microscope.

PROTECTION FACTORS

RESPIRATOR TYPE	PROTECTION FACTOR
Air purifying: Negative pressure respirator High efficiency filter Half facepiece	10
Air purifying (PAPR): Negative pressure respirator High efficiency filter Full facepiece	50
Type C supplied air: Positive pressure respirator Pressure demand Full facepiece	1000

RESPIRATOR TYPE	PROTECTION FACTOR
Type C supplied air: Positive pressure respirator, pressure demand Full facepiece Equipped with an auxiliary positive pressure Self-Contained Breathing Apparatus (SCBA)	over 1000

3.05 PROTECTIVE CLOTHING

Furnish personnel exposed to airborne concentrations of asbestos fibers greater than or equal to the permissible exposure limit with disposable protective whole body clothing, head covering, gloves, and foot coverings. Furnish disposable plastic or rubber gloves to protect hands. Cloth gloves may be worn inside the plastic or rubber gloves for comfort, but shall not be used alone. Use tape to secure sleeves at the wrists and to secure foot coverings at the ankles.

3.06 PERSONNEL DECONTAMINATION UNIT

Provide a worker decontamination area adjacent to the work area. The decontamination area will consist of a polyethylene sheet placed adjacent to the work area larage enough for employees to remove disposable coveralls and wipe/rinse off prior to exiting the work area. All waste generated during the decontamination will be disposed of as asbestos-containing debris. At the conclusion of work the plastic sheet will be disposed of as asbestos-containing waste. Position a HEPA vacuum at the decontamination area which workers will use to clean off protective clothinig prior to removal.

All equipment, removal personnel, and other personnel exiting the ACM removal work area must decontaminate prior to exiting into the asbestos control zone.

3.07 CLEANING OF DECONTAMINATION AREA

Clean debris and residue from the Decontamination Area on a daily basis or as otherwise indicated on Contract Drawings. Damp wipe or HEPA vacuum all surfaces after each shift change.

3.08 WORK PROCEDURE

Perform asbestos related work in accordance with 29 CFR 1926.1101 and 1926.1018 and as specified herein. Use wet removal procedures. Personnel shall wear and use protective clothing and equipment as specified herein. Eating, smoking, or drinking shall not be permitted in the asbestos control area or change room. Personnel of other trades not engaged in the removal of ACM shall not be exposed at any time to airborne concentrations of asbestos greater than or equal to 0.01 fibers (longer than 5 micrometers) per cubic centimeters of air (TWA), unless the personnel protection provisions of this specification are complied with by the trade personnel. Shut down, lock out, and isolate HVAC systems that supply, exhaust, or pass through the asbestos control areas. Seal intake and exhaust vents in the asbestos control area with 6 mil plastic sheet and tape. Seal seams in HVAC components that pass through asbestos control area. Disconnect electrical service

when wet removal is performed and provide temporary electrical service protected by a ground fault circuit interrupter (GFCI).

3.09 ASBESTOS CONTROL AREA REQUIREMENTS

A. Provide a marked perimeter around the work area during asbestos removal operations. No one will be permitted in the asbestos control area unless the person is provided with appropriate training and protective equipment. During the asbestos removal operation, should the asbestos abatement employees need to exit the controlled area, they will be required to remove their disposable coveralls, place them in an approved impermeable disposal bag, and then exit the area.

B. Contractor shall collect personal air monitorig samples on 25% of the work crew or a minimum of two employees whichever is greater during each work shift.

C. Contractor's IH or IHT shall conduct boundary samples upwind and downwinid of the asbestos control area during each work shift. If the concentration of airborne asbestos fibers at the boundaries is greater than or equal to 0.01 fibers (longer than 5 micrometers) per cubic centimeter of air, or background quantity whichever is greater, the IH shall stop work, and correct the condition(s) causing the increase, and notify the County immediately. If adjacent areas are contaminated, the contaminated areas shall be cleaned and visually inspected. The IH shall certify that the area has been cleaned of all asbestos material contamination.

3.10 ASBESTOS HANDLING PROCEDURES

General Procedure: Contain and control all asbestos fibers generated as part of this project. Wet asbestos material with a fine spray of amended water. Remove material and immediately place in sealed impermeable bags. Collect asbestos waste, scrap, debris, bags, containers, equipment, and asbestos-contaminated clothing and place in sealed impermeable bags constructed of 6 mil plastic sheet. Provide asbestos caution labels on sealed impermeable bags and waste containers. Use a lined chute, hoist, lift or other State-approved method to move bagged asbestos-containing waste material to asbestos waste transport container. If chute is used, it must be affixed with a negative pressure unit to minimize airborne fibers.

3.11 AIR MONITORING

A. Work Area Airborne Fiber Levels: The IH, retained by the Contractor, shall monitor airborne fiber levels in the Work Area. The purpose of this air montornig will be to detect potential airborne asbestos concentrations inside and outside of the project areas.

B. Outside the Work Area (Barrier) Fiber Levels: The IH shall monitor airborne fiber levels outside the work area to determine if leakage is occuring into non-work areas

C. The IH shall conduct air monitoring throughout the course of the project.

D. Clearance: The IH shall perform a visual and aggressive air clearance of asbestos removal areas; no visible dust or debris shall remain. If daily personal air sample results do not exceed background levels or 0.01 f/cc, post abatement aggressive air sampling may not be required.

3.12 STOP ACTION LEVELS

A. Inside Work Area: Maintain airborne levels in the work area of less than the Stop Action Level given below for the type of respiratory protection in use. If the fiber counts levels rise above this figure for any sample taken, revise work procedures to lower fiber counts. If fiber count levels for any work shift or 8 hour period exceeds the Stop Action Level, stop all work except corrective action, and leave air circulation system in operation and notify the IH. After correcting cause of high fiber levels, do not recommence work for 24 hours unless otherwise authorized, in writing, by the IH.

ASBESTOS

STOP ACTION LEVEL (f/cc)	RESPIRATOR REQUIRED	PROTECTION FACTOR
1	Half face APR	10
5	Full face APR	50
10	PAPR or Type C, Continuous flow	100
100	Type C, Pressure demand	1000

B. Outside Work Area: If any air sample taken outside of the Work Area exceeds the base line established prior to start of work, immediately and automatically stop all work except corrective actions. The IH and the Contractor shall determine the source of the high reading and take appropriate corrective actions.

C. If the high reading was the result of a failure of Work Area isolation measures initiate the following actions:

1. Decontaminate the affected area(s).

2. Require that respiratory protection be worn in the affected area until the area is cleared for other trade or reoccupancy.

D. If the high reading was the result of other causes, initiate corrective action as determined by the Contractor and the IH.

E. Fibers Counted: TEM analysis shall be used to resolve any disputes regarding fiber types when a project has been stopped due to excessive airborne fiber counts. The TEM analytical costs and cleanup costs will be borne by the Contractor.

3.13 ANALYTICAL METHODS

The following methods will be used in analyzing filters used to collect air samples. The filters used shall be in accordance with the referenced methods.

A. Samples collected for PCM analysis shall be analyzed by NIOSH 7400 method.

B. Samples collected for TEM analysis shall be analyzed by the method set forth in the AHERA Regulations, 40 CFR 763, Appendix A.

3.14 SAMPLE VOLUMES

General: The number and volume of air samples taken by the IH will be in accordance with the following schedule. Sample volumes given may vary depending upon the analytical method used.

3.15 SCHEDULE OF AIR SAMPLES

Sample Cassettes: Samples will be collected on 25 mm cassettes with 50 mm extension cowl as follows.

PCM: 0.8 micrometer mixed cellulose ester

3.16 BASELINE - ASBESTOS

Before Start of Work: The IH shall secure the following air samples to establish a baseline before start of ACM removal work:

LOCATION SAMPLED	**MINIMUM NUMBER OF SAMPLES**	**MINIMUM VOLUME (LITERS)**	**RATE (LPM)**
Each Work Area	2 for up to 5,000 sq.ft.; one additional per each additional 5,000 sq.ft.	1,200	1 - 12
Outside Work Area	1	1,200	1 – 12

3.17 DAILY-ASBESTOS

A. From start of work, the Contractor shall take the following samples on a daily basis. The IH will collect the barrier samples.

SAMPLE TYPE & LOCATION	MINIMUM NUMBER OF SAMPLES	MINIMUM SAMPLE VOLUME (LITERS)	SAMPLE FLOW RATE (LPM)
Work Area – Each Work Area	2 per shift	480	1-5
Barrier – Area	2 per shift, unless	1,800	1-12

SAMPLE TYPE & LOCATION	MINIMUM NUMBER OF SAMPLES	MINIMUM SAMPLE VOLUME (LITERS)	SAMPLE FLOW RATE (LPM)
outside of containment (determined by the IH)	sample area is dusty; increase number as necessary		
Barrier – Area outside of Work Area (downwind & upwind)	2 per shift, unless sample area is dusty; increase number as necessary	1,800	1-12

B. Additional samples may be taken at the County's discretion. If airborne fiber counts exceed allowed limits, additional samples shall be taken as necessary to monitor fiber levels.

3.18 LABORATORY TESTING

The IH shall obtain samples daily and submit the sample results within 24 hours upon receiving the laboratory reports. The Contractor and the County will have access to all air monitoring tests and results.

3.19 CLEANUP AND DISPOSAL

A. Cleanup: Maintain surfaces of the control area free of accumulations of asbestos fibers. Restrict the spread of dust and debris; keep waste from being distributed over the general area. Do not dry sweep or blow down the space with compressed air. When ACM removal, disposal, and cleanup are complete, the IH shall certify, in writing, that the concentration of airborne asbestos in the control area and the waste container removal system are less than 0.01 fibers (longer than 5 micrometers) per cubic centimeters of air, and that there are no visible accumulations of dust, PPE were adequate, work procedures, ACM removal, boundary samples disposal procedures, containment and clearances samples were in accordance with 29 CFR 1926.1101and contract specifications.

B. Daily Inspections: The Contractor and IH will visually inspect the affected surfaces for residual asbestos material and accumulated dust before and after the removal of the asbestos control area. The Contractor shall reclean areas showing dust or residual materials. If recleaning is required, monitor the asbestos airborne concentrations during and after the recleaning and perform clearance.

C. Disposal of Asbestos: Dispose of waste asbestos material at a State and EPA approved landfill. Procedure for hauling and disposal shall comply with 40 CFR 61, Subpart M, and State, regional, and local standards. Sealed impermeable bags may be dumped from drums into the burial site unless bags have been broken or damaged. Damaged bags shall remain in the drum and the entire contaminated drum shall be buried. Uncontaminated

drums may be recycled. Workers unloading sealed drums shall wear appropriate respirators and personal protective equipment when handling asbestos materials at the disposal site.

D. Double Tape Wrapped: All asbestos materials shall be wrapped in 6 mil minimum thickness polyethylene sheets and taped with minimum 2 inch wide silver cloth duct tape. The asbestos materials shall be rewrapped with a second polyethylene sheet and taped before disposal to the dumpsite. Each bundle of wrapping shall not exceed 50 pounds in weight. Damaged polyethylene sheeting will not be accepted for disposal at the landfill.

D. Waste Shipment Records: Prior to delivery of ACM waste materials, the Contractor shall complete four copies of EPA's Waste Shipment Records requirements on manifesting ACM waste removal, transportation and final disposal. Payment for this section will not be made until a completed manifest from the disposal facility is returned, and a copy furnished to the County. Copy and instructions for Waste Shipment Record are attached at the end of this Section.

ENTRY LOG
(Sample)

DATE: _____

PROJECT: _____

SUPT.: _____

ALL PERSONNEL MUST SIGN-IN AND SIGN-OUT EVERY TIME THEY ENTER/EXIT THE WORK AREA. PLEASE PRINT CLEARLY. ATTACH EMPLOYEE RELEASE FROM FOR ALL VISITORS.

Name	Employer Name, address*, phone*	Time in	Time out	Purpose of visit	Type of PPE issued**

*Not required of Contractor's employees.

**Type of PPE (Personal Protective Equipment) issued to include list of protective clothing worn and type of respirator used (Type "C," half-face dual cartridge, etc.)

Note:

EMPLOYEE RELEASE FORM
(Sample)

Employee Name:

Employee Address:

Employee Telephone No.:

Name of Training center, Certificate Number and expiration Date:

Classification of work:

Have you had in the past or present, any respiratory problems?

Yes No

Have you worked in the past with asbestos or fiberglass type materials?

Yes No

The project you will be working on involves the use of asbestos and the removal of the asbestos from the building. Asbestos is considered a health hazard.

The company is supplying all necessary safety clothing and working conditions required and necessary for your protection from asbestos hazard.

You shall be instructed at the commencement of the job on the required use of safety equipment, clothing, working conditions, and procedures. These must be rigidly adhered to. Smoking is not permitted in the work area. Disregarding of safety instructions shall result in instant dismissal.

I acknowledge that safety instructions have been given to me by the company at my work commencement and I am thoroughly conversant with them and I have answered the above questions truthfully.

Signed (Employee) Date

Print name

CERTIFICATE OF WORKER'S ACKNOWLEDGEMENT

PROJECT NAME: _____ DATE: _____

PROJECT ADDRESS: _____

_____

CONTRACTOR: _____

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCER. IF YOU SMOKE AND INHAKE ASBESTOS FIBERS THE CHANCE THAT YOU WILL DEVELOP LUNG CANCER IS GREATER THEN THAT OF THE NON-SMOKING PUBLIC.

Your employee's contractor with the Owner for the above project requires that: You be supplied with the proper respirator and be trained in its use. You be trained in safe work practices and in the use of the equipment found on the job. You receive a medical examination. These things are to have been done at no cost to you.

RESPIRATORY PROTECTION: You must have been trained in the proper use of respirators, and informed of the type respirator to be used on the above referenced project. You must be given a copy of the written respiratory protection manual issued by your employer. You must be equipment at no cost with the respirator to be used on the above project.

TRAINING COURSE: You must be trained in the dangers inherent in handling asbestos and breathing asbestos dust and proper work procedures and personal and area protective measures. The topics covered in the course must have included the following:

Physical characteristics of asbestos
Health hazards associated with asbestos
Respiratory protection
Use of protective equipment
Pressure Differential Systems
Working practices include hands on or on-job training
Personal decontamination procedures
Air monitoring, personal and area

MEDICAL EXAMINATION: You must have had a medical examination within the past 12 months at no cost to you. This examination must have included: health history, pulmonary function tests and may have included an evaluation of a chest X-ray.

By singing this document you are acknowledging only that the Owner of the building you are about to work in has advised you of your right to training and protection relative to your employer, the Contractor.

Signature _____ Social Security No. _____

Print Name _____ Witness _____

ASBESTOS DISPOSAL FORM (Sample)

GENERATOR	1. WORK SITE NAME & MAILING ADDRESS	OWNER'S NAME	OWNER'S TELEPHONE NO.
	2. OPERATOR'S NAME & ADDRESS		OPERATOR'S TELEPHONE NO.
	3. WASTE DISPOSAL SITE (WDS) NAME, MAILING ADDRESS, AND PHYSICAL SITE LOCATION		WDS TELEPHONE NO.
	4. NAME AND ADDRESS OF RESPONSIBLE AGENCY		
	5. DESCRIPTION OF MATERIALS	6. CONTAINERS NO. TYPE	7. TOTAL QUANTITY M^3 (YD^3)
	8. SPECIAL HANDLING INSTRUCTIONS AND ADDITIONAL INFORMATION		
	9. OPERATOR CERTIFICATION: I HEARBY…		
	PRINTED/TYPED NAME & TITLE	SIGNATURE	DATE (MO/DY/YR)
TRANSPORTER	10. TRANSPORTER 1 (ACKNOWLEDGEMENT OF RECEIPT OF MATERIALS)		
	PRINTED/TYPED NAME & TITLE	SIGNATURE	DATE (MO/DY/YR)
	11. TRANSPORTER 2 (ACKNOWLEDGEMENT OF RECEIPT OF MATERIALS)		
	PRINTED/TYPED NAME & TITLE	SIGNATURE	DATE (MO/DY/YR)
DISPOSAL SITE	12. DISCREPANCY INDICATION SPACE		
	13. WASTE DISPOSAL SITE OWENR OR OPERATOR: CERTIFICATION OF RECEIPT OF ASBESTOS MATERIALS COVERED BY THIS MANIFEST EXCEPT AS NOTED IN ITEM 123.		
	PRINTED/TYPED NAME & TITLE	SIGNATURE	DATE (MO/DY/YR)

ASBESTOS NOTIFICATION OF DEMOLITION & RENOVATION

(Ref. HAR Chapter 11-501)

SEBD TO: STATE DEPARTMENT OF HELATH
NOISE, RADIATON & INDOOR AIR QUALITY
INDOOR AIR QUALITY SECTION
591 ALA MOANA BOULEVARD, ROOM 202
HONOLULU, HAWAII 96813
Phone (808) 586-5800 Fax 586-5811

I. Type of notification: O=original R=revised C=cancelled			
II. Type of operation: D=demolition R=renovation OD=Ordered Demolition ER=Emergency Renovation			
III. Facility information			
Owner name:			
Address:			
City:	State:		Zip code:
Contact person:		Telephone#:	
Removal contractor:		License#:	
Address:			
City:	State:		Zip code:
Contact person:		Telephone#:	
Other Operator			
Address:			
City:	State:		Zip code:
Contact person:		Telephone#:	
IV. Is asbestos present (Y/N): Inspector's name:	Certification#:	State of certification:	
V. Facility description (Include building number, floor and room number)			
Building name:			
Address:			
City:	State:		Zip code:
Site location:			
Building size:	Floors:		Age:
VI. Procedure used to detect the presence of asbestos Laboratory name:	Analytical method		
VII. Specify the nature of the asbestos material (TSI, surfacing, VAT, miscellaneous):			

Amount of asbestos, including: 1. RACM to be removed 2. CATI left in place, and 3. CATII left in place	RACM to be Removed	Nonfriable ACM not to be removed	
		Category I	Category II
Pipes (linear ft.)			
Surfacing (square ft.)			
Facility components (Cu. ft.)			

VIII. Scheduled asbestos abatement dates Start (mm/dd/yy):	Finish (mm/dd/yy)		
Circle workdays and time:	Weekdays:	daytime	nighttime
	Weekends:	daytime:	nighttime:

IX. Scheduled renovation/demolition dates Start (mm/dd/yy): Finish (mm/dd/yy) Circle workdays and time: Weekdays: daytime nighttime Weekends: daytime: nighttime:			
X. Description of the planned renovation/demolition work and methods to be used:			
XI. Description of the work practices and engineering controls to be used to prevent emissions of asbestos from the work-site: Project designer name: Certification#: State:			
XII. Waste transporter #1			
Name :			
Address :			
City:	State:	Zip code:	
Contact person:	Telephone#:		
Waste transporter #2			
Name :			
Address :			
City:	State:	Zip code:	
Contact person:	Telephone#:		
XIII. Waste disposal site:			
Facility Name:	Telephone#:		
Address :			
City:	State:	Zipcode:	
XIV. For demolition ordered by a government agency, please identify:			
Name:	Title:		
Authority (Agency):			
Date of order (mm/dd/yy):	Date ordered to begin (mm/dd/yy):		
XV. For emergency renovation:			
Date and time of emergency Date (mm/dd/yy): Time: (a.m./p.m.)			
Description of sudden, unexpected events and the damage caused:			
Explanation of how the event caused an unsafe condition or would cause damage or an unreasonable financial burden:			
Person contacted for the approval at the Noise, Radiation & Indoor Air Quality Branch: Name: Date (mm/dd/yy): Time: (a.m./p.m.)			
XVI. Description of procedures to be followed in the event that unexpected asbestos is found or previously nonfriable asbestos material becomes crumbled, pulverized or reduced to powder.			

XVII. I certify that an individual trained in the provisions of Hawaii administrative rules chapter 11-501, and certified as a contractor/supervisor, will be on-site during the entire renovation and/or demolition and evidence that the required training has been accomplished for this and all workers will be available at the work-site. Signature of owner/operator Date (mm/dd/yy):
XVIII. I certify that the information on this notification is correct. Signature of owner/operator Date (mm/dd/yy):

XIX. Additional Comments:

END OF SECTION

SECTION 13282 - LEAD HAZARD CONTROL

PART 1 - GENERAL

1.01 SUMMARY

This section defines the Contractor's responsibilities for controlling lead hazards associated with the project. Contractor shall assume that all paints contain measurable levels of lead and perform the work in accordance with the federal, state, and local regulations. The objective is to prevent lead exposure to workers, occupants, staff, and visitors.

Contractor shall ensure that all employees and subcontractors have access to the information in this Section and understand and control the lead hazards.

1.02 PRELIMINARY

In performing demolition or renovation of surfaces with LBP, all possible safeguards, precautions, and protective measures shall be utilized to prevent exposure of any individuals to lead.

A. The disturbance of lead-containing materials may cause lead-containing dust and fumes to be released into the atmosphere, thereby creating a potential health hazard to workers and other personnel within the project area. The Contractor shall apprise all workers, supervisory personnel, subcontractors, and consultants who will be at the job site of the potential health hazards and of proper work procedures, which must be followed when disturbing the lead-containing paint.

B. The Contractor and his/her subcontractors shall review the plans and specifications and shall ensure that he and his subcontractors fully understand its contents.

C. The Contractor and his/her subcontractors shall inform their respective employees and other individuals performing work in and around the building of the presence of lead-containing paints at the project site.

D. The Contractor shall take appropriate and continuous measures and methods to provide all necessary information and devices, as necessary, to protect all workers from the potential hazards of lead exposure through respirable airborne dust. Such measures shall comply with applicable federal, state, and local regulations.

E. The Contractor shall assure that only workers who have been trained in accordance with 29 CFR 1926.62 and HIOSH 12-148.1 are allowed to perform the work specified in this section.

F. All work under this contract shall be performed in strict accordance with all applicable federal, state, and local regulations, standards, and codes governing the preparation, treatments, handling, storage, transport, and disposal of LBP materials. The most recent edition of the aforementioned shall govern the execution of this project.

1.03 PATENTED DEVICES, MATERIAL AND PROCESS

Not applicable.

1.04 WORK SPECIFIED IN THIS SECTION

A. The Contractor shall control the dust during the demolition or renovation in accordance with laws, regulations, and current best work practices. It is the responsibility of the Contractor to understand the potential lead hazard. The work covered by this section includes the incidental procedures and equipment required to protect workers, staff, occupants, and visitors of the facility or area, or both, from contact with lead. Perform work in accordance with 29 CFR 1910.1025 and the requirements specified herein.

1.05 COORDINATION WITH OTHER SECTIONS

A. Prior to commencement of work, an annotated description of all existing damaged and missing items shall be submitted to the County. It will be the Contractor's responsibility to repair and/or replace to the County's satisfaction all items identified as damaged and/or missing that cannot be proven to have been in this condition prior to the commencement of this project.

1.06 SUBMITTALS

Before start of work, submit the following to the County for review. Do not begin work until these submittals are returned with the County's approval indicating that the submittal is returned for unrestricted use.

A. Statements

1. Lead Hazard Control Plan: Submit a detailed job-specific plan of the work procedures to be used in the work with lead-containing paint. The Plan shall include, but not limited to, clear scope of work and methods to control lead hazard.

2. Training Certificates: Submit a copy of all workers OSHA/HIOSH required "Lead in Construction" training.

B. Records

1. Laboratory Analytical Results: Submit copies of air monitoring or other testing results, if applicable, to the County within 24-hours of receipt from the laboratory.

2. Uniform Hazardous Waste Manifest Form: Submit completed Uniform Hazardous Waste Manifest Form, when applicable.

3. Manufacturer's Material Safety Data Sheets: Submit for paint stripping materials, if applicable.

1.07 PRODUCT HANDLING

A. Material that becomes contaminated with lead shall be disposed of in accordance with applicable regulations.

1.08 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

1. ANSI Z88.2 1980 Practice for Respiratory Protection

B. CODE OF FEDERAL REGULATIONS (CFR)

1. 29 CFR-1910.134 Safety and Health Standards (Respiratory Protection)

2. 29 CFR-1910.1025 Safety and Health Standards (Lead)

3. 40 CFR 260 Hazardous Waste Management System: General

4. 40 CFR 261 Identification and Listing of Hazardous Waste

5. 40 CFR 262 Standards for Generators of Hazardous Waste

6. 40 CFR 263 Standards for Transport of Hazardous Waste

7. 40 CFR 264 Standard for Architects and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

8. 40 CFR 265 Interim Status Standards for Architects and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

C. U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing

D. UNDERWRITERS LABORATORIES, INC. (UL)

UL-586 1985 High-Efficiency, Particulate, Air Filter Units

1.09 GENERAL REQUIREMENTS

A. Title to Materials: Waste material resulting from the work shall be disposed of as specified herein and shall become the property of the Contractor.

B. Medical Examinations: Before exposure to lead dust, the Contractor shall provide workers with a comprehensive medical examination as required by 29 CFR

1910.1025. Examination is not required if records show the employee has been examined as required by 29 CFR 1910.1025 within the past year. Maintain complete and accurate records of employees' medical records for a period of 40 years or 20 years after termination of employment whichever is longer.

C. Training: Within one year prior to assignment to lead work, each employee shall receive training with regard to the hazards of lead, safety and health precautions, the use and requirements for protective clothing, equipment, and respirators, and the additional requirements of 29 CFR 1910.1025. Furnish each employee with a respirator fit test as required by 29 CFR 1910.1025. Fully cover engineering and other hazard control techniques and procedures.

D. Respirator Program: Establish and implement a respirator program as required by ANSI A88.2, 29 CFR 1910.134, and 29 CFR 1910.1025.

E. Health and Safety Compliance: In addition to detailed requirements of this specification, comply with laws, ordinances, rules, and regulations of federal, state, and local authorities regarding handling, storing, transporting, and disposing of lead waste materials. Comply with the applicable requirements of the current issue of 29 CFR 1910.1025. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where specification requirements and referenced documents vary, the most stringent requirement shall apply.

1.10 DEFINITIONS

A. Area Monitoring: Sampling of lead concentrations within the lead control area and outside the lead control area, which is representative of the airborne concentrations of lead that may reach the breathing zone of personnel potentially, exposed to lead.

B. Lead: Metallic lead, all inorganic lead compounds, and inorganic lead soaps. Excluded are all other organic lead compounds.

C. Lead Control Area: An area where lead removal operations are preformed which is isolated by physical boundaries to prevent unauthorized entry of personnel and to prevent the spread of lead dust, paint chips, or debris.

D. Lead Permissible Exposure Limit (PEL): The limit is 50 micrograms per cubic centimeter of air as an 8-hour time weighted average as determined by Appendix A of 29 CFR 1910.25.

E. Action Level (AL): The AL for an 8-hour time TWA exposure to airborne lead is 30 micrograms per cubic meter.

F. HEPA Filter Equipment: High efficiency particulate air (HEPA) filtered vacuuming equipment with a UL 586 filter system capable of collecting and retaining Lead dust.

G. Personal Monitoring: Sampling of lead concentrations within the breathing zone of an employee to determine the 8-hour time weighted average in accordance with 29 CFR 1910.1025. The samples shall be representative of the employee's work tasks. The

breathing zone shall be considered an area within 12 inches of the nose or mouth of an employee.

H. Time Weighted Average (TWA): The TWA is an 8-hour time weighted average of airborne lead per cubic centimeter of air which represents the employee's 8-hour workday as determined by 29 CFR 1910.1025.

I. County's Representative: A qualified person(s) designated by the County to perform sampling, work review, or other actions as designated in this specification.

PART 2 - PRODUCTS

None specified in this Section.

PART 3 - EXECUTION

3.01 PREPARATION PRIOR TO DISTURBANCE OF LEAD PAINT

A. Contractor shall document existing paint chips or debris prior to any work (exterior/and interior). Contractor shall preclean horizontal surfaces within the work area prior to disturbing existing lead paint. Contractor shall treat paint chips or debris collected during precleanning as lead-containing waste.

B. Contractor shall perform the work minimizing lead dust by the use of wet methods and tools with HEPA collection devices. If air monitoring indicates control measures are inadequate, the Contractor shall stop work and implement enhanced engineering controls.

C. Contractor shall establish a lead control area. Isolate the portions of the building not within the scope of work using 6-mil polyethylene sheeting, if feasible.

D. Contractor shall demarcate the exterior lead control area using lead warning tape. Lead-warning tape should be at least 20 feet away from closest painted surface being disturbed. Contractor shall place 6-mil polyethylene drop sheets around exterior surfaces. Contractor shall secure drop sheets so that wind or other forces will not dislodge the sheets. Drop sheets shall extend horizontally from the base of the building a distance equal to at least one-half the height of the painted surface being disturbed, but at least 6-feet in depth. Drop sheets shall be periodically cleaned and kept free of debris. Any water captured by the drop sheet shall be treated as lead-contaminated.

3.02 ACTIVITIES DISTURBING LEAD PAINT

A. When applicable, Contractor shall perform lead paint removal or demolition as indicated on the plans, minimizing lead dust by the use of wet methods and tools with HEPA collection devices. If air monitoring indicates control measures are inadequate, the Engineer may stop work and implement enhanced engineering controls.

B. Contractor shall not perform dry removal or dry sweeping. Wastes or paint debris generated during removal shall be promptly staged or packaged, and shall not be allowed to accumulate uncontrolled beyond the end of the shift. Lead-containing wastes shall be properly marked and stored in marked and secure containers appropriate for storing lead-containing waste. Contractor shall never allow lead-containing wastes to be stored outside (1) the lead-control area, (2) in a high traffic unsecured area, (3) or where the waste could interact with rainfall or wind and create a secondary hazard or contamination.

3.03 LEAD CONCENTRATIONS IN THE WORK AREA

The maximum permissible exposure to airborne concentations of lead within the work area shall be in accordance with 29 CFR 1926.62 and HIOSH 12-148.1. The work shall stop whenever these limits are exceeded and the Contractor shall remedy the condition prior to commencing the work.

Instruct and train each worker in proper respiratory use and require that each worker always wear a respirator, properly fitted on the face, in the Work Area from the start of any operation which may cause or airborne lead dust until the Work Area is completely decontaminated. Use respiratory protection appropriate for the fiber or lead dust levels encountered in the work place or as required for other toxic or oxygen-deficient situations encountered.

1. Air Purifying Respirators

a. Respirator Bodies: Provide half face or full face type respirators. Equip full face respirators with a nose cup or other anti-fogging device as would be appropriate for use in air temperatures less than 32 degrees fahrenheit.

b. Filter Cartridges: Provide, at a minimum, HEPA type filters labeled with NIOSH and MSHA Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mists including Asbestos-Containing Dusts and Mists" and color coded in accordance with ANSI Z228.2 (1980). In addition, a chemical cartridge section may be added, if required, for solvents, etc., in use. In this case, provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH/MSHA Certification.

c. Non-permitted respirators: Do not use single use, disposable or quarter face respirators.

d. Require that respiratory protection be used at all times that there is any possibility of disturbance of LBP materials whether intentional or accidental.

e. Require that a respirator be worn by anyone in a Work Area at all times when LBP is disturbed, regardless of activity, during a period that starts with any operation which could cause airborne lead dust until the area has been cleared for re-occupancy.

f. Regardless of Lead Dust Levels: Require that the minimum level of respiratory protection used be half-face air-purifying respirators with high efficiency particulate air filters.

2. Fit Testing

a. Initial Fitting: Provide initial fitting of respiratory protection during a respiratory protection course of training. Fit types of respirator to be actually worn by each individual. Allow an individual to use only those respirators for which training and fit testing have been provided.

b. On an annual basis, check the fit of each worker's respirator by having irritant smoke blown onto the respirator from a smoke tube.

c. Upon Each Wearing: Require that each time an air-purifying respirator is put on it be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions or ANSI Z88.2 (1980).

3. Type of Respiratory Protection Required

a. Provide Respiratory Protection as indicated in paragraph below. Higher levels of protection may be provided as desired by Contractor, or as directed by the Engineer. Where paragraph below does not apply, determine the proper level of protection by dividing the expected or actual airborne lead dust count in the Work Area by the "protection factors" given below.

b. Use the following unless air monitoring results indicate greater protection is necessary. Refer to Protection Factors table for choice of respirators.

1. Loose equipment cleaning prior to removal in uncontaminated area: Half-face dual cartridge-type respirator.
2. Plastic installation which does not disturb lead-based paint: Half-face dual cartridge-type respirator.
3. Removing or cleaning items or plastic installation when such operation may disturb lead-dust paint: Dual Cartridge, Half-face Air Purifying Respirators.
4. Lead-containing material removal: Dual Cartridge, Half-face Air Purifying Respirators.
5. Gross clean of removal area(s): Dual Cartridge, Half-face Air Purifying Respirators.
6. Loading and unloading drums on truck (outside work area): Dual Cartridge, Half-face Air Purifying Respirators.
7. Lead-Based Paint removal: Dual Cartridge, Half-face Air Purifying Respirators.

PROTECTION FACTORS

RESPIRATOR TYPE	PROTECTION FACTOR
Air purifying: Negative pressure respirator High efficiency filter Half facepiece	Up to 500 ug/m^3
Air purifying (PAPR): Negative pressure respirator	Up to 2500 ug/m^3

RESPIRATOR TYPE	PROTECTION FACTOR
High efficiency filter Full facepiece	
Powered-air purifying Positive pressure respirator High efficiency filter Half or full facepiece Or Type C supplied air: Positive pressure respirator, Continuous-flow Half or full facepiece	Up to 5000 ug/m^3

3.04 PROTECTIVE CLOTHING

Furnish personnel exposed to lead dust with disposable protective whole body clothing, head covering, gloves, and foot coverings. Furnish disposable plastic or rubber gloves to protect hands.

3.05 WARNING SIGNS AND LABELS

Provide warning signs at approaches to the lead control areas, if lead-containing paint is disturbed. Locate signs at such a distance that personnel may read the sign and take the necessary precautions before entering the area. Provide and affix labels to impermeable bags, lead waste drums, and other containers containing lead materials, scrap, waste, or debris. Signs and labels shall comply with the requirements of 29 CFR 1910.1025.

3.06 TOOLS

Filters on vacuums and exhaust equipment shall be absolute HEPA filters and UL 586 labeled.

3.07 AIR MONITORING

A. Employee Monitoring: If paint removal is planned, the Contractor shall monitor employees' exposure to lead in accordance with OSHA requirements. Contractor shall collect air samples from employees' breathing zones during each shift, for the duration of the lead-disturbing work. Contractor shall collect samples from at least 25% of workers performing lead-disturbing tasks, and not less than two.

B. Work area and Adjacent Areas: The Contractor shall collect samples to measure lead concentrations generated during the removal, in the work area and in areas adjacent to the lead control area.

3.07 STOP ACTION LEVELS

A. Inside Work Area: Maintain airborne levels in the work area of less than the Stop Action Level given below for the type of respiratory protection in use. If the lead dust levels rise above this figure for any sample taken, revise work procedures to lower ambient dust levels. If lead dust levels for any work shift or 8-hour period exceeds the Stop Action Level, stop all work except corrective action; notify the County's representative. After correcting cause of lead dust levels, do not recommence work for 24 hours unless otherwise authorized, in writing, by the County's representative.

LEAD

STOP ACTION LEVEL ($\mu g/m^3$)	RESPIRATOR REQUIRED	PROTECTION FACTOR
500	Half face APR	10
5000	PAPR or Type C, Continuous flow	100
50000	Type C, Pressure demand	1000

B. If the high reading was the result of a failure of Work Area isolation measures initiate the following actions:

1. Decontaminate the affected area(s).

2. Require that respiratory protection be worn in affected the area until the area is cleared for reoccupancy.

3. After a Certification of Visual Inspection has been completed for the Work Area, final air samples and/or wipe samples will be collected from the work area. If these samples are below regulatory limits, remove barriers separating the work area from the affected area.

C. If the high reading was the result of other causes, initiate corrective action as determined by the County's representative.

D. Effect on Contract Sum

1. Complete corrective work with no change in the Contract Sum if lead dust levels were caused by Contractor's activities; additional lead air and wipe sample analysis charges will be borne by Contractor.

2. The Contract Sum and schedule will be adjusted for additional work caused by high lead dust concentration beyond the Contractor's control.

3.08 ANALYTICAL METHODS

The following methods shall be used in analyzing filters used to collect air samples. The filters used shall be in accordance with the referenced methods. Samples collected for Lead analysis shall be collected and analyzed utilizing NIOSH 7082 method.

3.09 SAMPLE MEDIA

Lead Sample Cassettes: Samples will be collected on 37 mm cassettes with 50 mm extension cowl with 0.8 micrometer cellulose ester membrane.

3.10 LABORATORY TESTING

A. The services of a testing laboratory shall be employed by the Contractor to obtain air samples as indicated and to perform laboratory analyses of air samples collected by the Contractor. Lead air sample results will be made available to the County no later than five-days after sample collection, and within 24 hours after the receipt of laboratory analytical results.

B. The County of Hawaii will have access to all air monitoring tests and results.

3.11 CLEAN UP

A. Contractor shall maintain surfaces of the lead control area free of accumulations of paint chips and dust. Restrict the spread of dust and debris; keep waste from being distributed over the general area. Do not dry sweep the area. When the paint removal and demolition is complete, clean all visible lead paint contamination by vacuuming with a High Efficiency Particulate Air (HEPA) filtered vacuum cleaner followed by wet mopping if vacuuming is not effective. The Contractor shall certify that the work was performed in accordance with 29 CFR 1910.1025, and that there are no visible accumulations of lead paint and dust on the work site. The County's representative will visually inspect the affected surfaces for residual lead paint chips and accumulated dust after the work is completed. The Contractor shall reclean areas showing dust or residual paint chips.

B. The Contractor is responsible for the restoration and cleaning of any areas outside the work area impacted by or contaminated by lead-containing dust or debris generated by the Contractor's removal, handling, or storage of lead-containing waste. Contractor shall perform remedial cleaning and restoration of these areas, if any, at no additional cost to the County.

3.14 CLEARANCE

A. The Contractor shall visually inspect the affected surfaces for residual lead paint chips and accumulated dust.

B. The Contractor shall visually inspect exterior areas adjacent to the work area for lead paint chips or debris. The contractor shall restore any areas impacted by lead dust or debris from the removal work to their original condition.

3.15 DISPOSAL

If the local landfill requires, a representative sample of the waste generated during the removal work shall be collected and analyzed. The sample will be submitted to an approved laboratory for Toxicity Characteristic Leachate Procedure (TCLP) analysis. If analytical result indicates the TCLP level is below the EPA guideline or within landfill acceptance criteria, the waste generated during the renovations can be disposed of as general construction debris. If the TCLP test fails, or exceeds the landfill acceptance criteria, the wastes shall be treated as hazardous waste and disposed of in a Resource Conservation Recovery Act (RCRA) permitted landfill; the Contractor shall contact the County. The waste manifest must be signed by the County.

The Contractor shall submit a copy of the TCLP analytical results, if performed, Hazardous Waste Manifest, and Landfill Receipt, to the County within 48 hours of receipt.

3.16 GENERAL

A. All waste is to be hauled by a waste hauler with all required licenses from all state and local authority with jurisdiction.

B. Protect interior of truck or dumpster with Critical and Primary Barriers.

C. Carefully load containerized waste in fully enclosed dumpsters, trucks or other appropriate vehicles for transport. Exercise care before and during transport, to insure that no unauthorized persons have access to the material. Vehicle must be placarded with DOT label.

D. Do not store containerized materials outside of the Work Area. Take containers from the Work Area directly to a sealed truck or dumpster.

E. Do not transport Lead waste materials on open trucks. If waste material is to be transported in drums, label drums with same warning labels as bags. Uncontaminated drums may be reused. Treat drums that have been contaminated as lead paint waste and dispose of in accordance with this specification.

F. Advise the hazardous waste storage facility in advance of transport, of the quantity of material to be delivered.

G. Retain receipts from hazardous waste storage for materials disposed of.

H. After completion of hauling disposal of each load, submit copies of waste manifest, chain of custody form, and hazardous waste storage facility receipt to the Engineer. The final contract payment will not be made until all documents are submitted.

APPENDIX A

HAZARDOUS WASTE DISPOSAL LOG (Sample)

Name of project _____

Street address _____

City, State, Zip code _____

Year 20___	**Description of Hazardous Waste**	**Approximate Weight Kg Pound**	**Special Handling**
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

_____

By Signature

_____

Print Name

APPENDIX B

PROJECT HAZARDOUS WASTE LOG (Sample)

Project: _____
Job no.: _____

Start date: _____ Completion date: _____

General contractor: _____
Address: _____
_____
Telephone/fax no.: _____
Name of superintendent for this project: _____

Name of generator: _____
Address: _____
_____
Telephone/fax no.: _____

Description of hazardous waste: _____
_____
Approximate weight (kg or pounds):
Monthly disposal log:
Month: _____ Weight: _____
_____
_____
Disposal site: _____

Contractor disposing of hazardous waste: _____
Address: _____
_____
Telephone/fax no.: _____

Disposal contractor is a (check one):

Conditionally Exempt Small Quantity Generator	
Small Generator	
Large Generator	

APPROVAL:

Competent Person: _____
Company: _____
Address: _____
_____
Telephone no. _____

_____
Signature Date

END OF SECTION

SECTION 13284 – REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCB)-CONTAINING LIGHT BALLASTS AND MERCURY-CONTAINING LAMPS

PART 1 - GENERAL

1.01 SUMMARY

This Section specifies the requirements for protection of workers, prevention of contamination of adjacent areas, performing removal of PCB-containing light ballasts and mercury-containing lamps, post-abatement cleaning, and appropriate disposal of removed materials.

1.02 DESCRIPTION

A. In performing PCB and mercury removal, all possible safeguards, precautions and protective measures shall be utilized to prevent exposure of any individual to PCB-containing particulates or mercury vapor.

B. The Contractor shall furnish all labor, materials and equipment necessary to carry out the safe removal and disposal of PCB-containing light ballasts, any PCB contaminated light fixtures, mercury-containing lamps and high pressure sodium bulbs throughout the building areas to be renovated in compliance with all applicable laws and regulations including all incidental and pertinent operations.

C. It is the Contractor's responsibility to determine amount of PCB-containing light ballasts, PCB contaminated light fixtures, mercury-containing lamps and high pressure sodium bulbs in the building areas to be renovated before start of any work.

D. The Contractor shall review the Report *titled HAZARDOUS MATERIALS SURVEY REPORT FOR HO'OLULU EDITH KANAKA'OLE MULTI-PURPOSE FACILITY, 350 KALANIKOA STREET, HILO, HI (99 pages), prepared by Myounghee Noh & Associates and dated November 13, 2009*

E. Contractor shall not be allowed to perform any on-site work unless the authorized representative of the Director is present. Contractor shall give no less than a 10 working day written notice, by facsimile, to the Director of the actual start of work date and time.

F. The Contractor shall comply with all applicable Federal, State and local regulations. Where requirements of this Specification and the referenced documents vary, the most stringent requirement shall apply.

1.03 REFERENCES

A. The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only, and include but are not limited to, the following.

B. CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910.1000	Air Contaminants
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communication, Emergency Response Information, and Training Requirements.
49 CFR 178	Shipping Container Specification

C. HAWAII OCCUPATIONAL SAFETY AND HEALTH (HIOSH)

12-114.2	Personal Protective Equipment
12-121.2	Fall Protection
12-122.2	Materials Handling, Storage, Use, and Disposal
12-151	Hazardous Waste Operations and Emergency Response

1.04 DEFINITIONS

A. Authorized Representative of the Director: the person or persons designated by the County of Hawaii to act on its behalf.

B. Contractor: The Contractor is that individual, or entity under contract to perform the herein listed work.

C. Leak: Any instance in which a PCB article, PCB container, or PCB equipment has any PCBs on any portion of its external surface.

D. Mercury-Containing Lamps: As used in this Specification shall mean all fluorescent and high-intensity discharge (HID) lamps without labeling stating “No Mercury”.

E. Polychlorinated Biphenyls (PCBs): PCBs as used in this Specification shall mean PCBs, PCB-containing light ballasts, and PCB containers, as defined in 40 CFR 761, Section 3, Definitions.

F. PCB-Containing Ballasts: As used in this Specification shall mean all fluorescent and high-intensity discharge (HID) lamp ballasts without labeling stating “No PCBs”.

G. Spill: Both intentional and unintentional spills, leaks, and other discharges where the release results in any quantity of PCBs running off or about to run off the external surface of the equipment or other PCB source. This definition also includes the contamination resulting from these releases.

1.05 QUALITY ASSURANCE

A. Training: Within one year prior to assignment to PCB and mercury work, each employee shall be instructed by an Industrial Hygienist or equivalent safety specialist concerning the hazards of PCB and mercury, necessary safety and health precautions, the use of and requirements for protective clothing, equipment and

respirators, and the additional requirements of 40 CFR 761. Training shall include engineering and other hazard control techniques and procedures.

B. Monitoring Specialist: The Monitoring Specialist, as an authorized representative of the Director, shall conduct the inspection of the PCB-containing light ballast and mercury-containing fluorescent lamp removal work during the removal operations to ensure that the requirements of the contract have been satisfied.

1.06 REQUIREMENTS

A. The Contractor shall examine and have at all times in his possession at his office (one copy) and in view at each job site office (one copy) the following materials:

1. Title 29 Code of Federal Regulations Part 1910.1000;

2. Title 40 Code of Federal Regulations Part 761;

3. Title 40 Code of Federal Regulations Part 262;

4. Title 40 Code of Federal Regulations Part 263;

5. Title 49 Code of Federal Regulations Part 172;

6. Title 49 Code of Federal Regulations Part 178;

7. Copies of any other applicable Federal, State and local regulations, standards, documents and codes;

8. Copies of the Contractor's PCB-Containing Light Ballast and Mercury-Containing Lamp Removal Plan, PCB-Containing Light Ballast and Mercury-Containing Lamp Disposal Plan and Emergency Procedures; and

9. Copies of all relevant training certificates held by workers and contractors/supervisors actively engaged in the project.

B. Whenever approval of the authorized representative of the Director is required prior to proceeding with work, the Contractor shall comply with the following:

1. The Contractor shall allow the authorized representative of the Director 24 hours from notification to respond to the request for site inspection(s).

2. The Contractor shall designate one person (either a foreman or superintendent) who shall be authorized to request inspections. The name of the designated person shall be submitted in writing to the authorized representative of the Director prior to commencing work. Request from any other person shall not be considered an official request.

3. The designated person when requesting an inspection shall provide the following information:
   a. Name of caller.
   b. Building and rooms to be inspected.

c. Work phase of inspection, as specified.

1.07 SUBMITTALS

A. Submit in accordance with SECTION 01330 – SUBMITTAL PROCEDURES.

B. Pre-Project Submittal: Submit a Pre-Project Submittal to the authorized representative of the Director for approval, no more than 10 working days after the written notice to proceed is received by the Contractor. No work shall commence until the Pre-Project Submittal is approved by the authorized representative of the Director. The submittal shall include the following.

C. Documentation of Instruction: Each worker and supervisor shall submit current training certificates required for removing PCB-containing light ballasts and mercury-containing fluorescent lamps, as described in section 1.04, Quality Assurance. Certificates shall be signed and dated by the Industrial Hygienist or equivalent safety specialist providing the training.

D. PCB-Containing Light Ballast and Mercury-Containing Lamp Removal Plan: The Contractor shall submit to the authorized representative of the Director a detailed job-specific plan of the work procedures to be used in the removal and disposal of PCB-containing light ballasts and mercury-containing lamps. The plan shall also include interface of trades, sequencing of PCB and mercury related work, respirator and protective equipment requirements, and a detailed description of pollution control methods. The plan shall be approved prior to the start of any PCB-containing light ballast and mercury-containing lamp removal work.

E. PCB-Containing Light Ballasts and Mercury-Containing Lamp Disposal Plan: The plan shall comply with all applicable requirements of Federal, State, and local regulations. The plan shall also include:

1. Identification of PCB and mercury waste associated with the work.

2. Estimated quantities of waste to be generated and disposed of.

3. Names and qualifications of personnel who shall be working on-site with PCB and mercury wastes.

4. Names, qualifications, facility locations and 24-hour point of contact information for each contractor that shall be transporting, storing, treating, disposing of waste. Furnish two copies of all applicable EPA, state, and local PCB waste permit applications, permits, and EPA identification numbers.

5. List of waste handling equipment to be used in performing the work, including cleaning, volume reduction, and transport equipment.

6. Spill prevention, containment, and cleanup contingency measures to be implemented.

F. Emergency Planning Procedures: Emergency planning shall be developed prior to initiation of work and approved by the Contractor and the authorized representative

of the Director. It shall include, but not be limited to, considerations of fire, explosion, electrical hazards, slips, trips and falls and heat related injuries. The Contractor shall develop written emergency procedures and provide employee emergency training.

G. Notification: Notify the authorized representative of the Director 10 working days prior to the start of any removal work.

H. Transporter Certification: Submit certification of notification sent to the EPA of PCB and mercury waste activities and EPA identification numbers.

I. Permits: Submit copies of all permits and arrangements for transportation and disposal of PCB and mercury waste.

J. Entry Log: Maintain a log of all persons who enter the work area while PCB and mercury abatement operations are in process. Submit copies weekly to the authorized representative of the Director.

K. Waste Disposal Manifest Forms: Submit copies of all transport manifests, trip tickets and disposal receipts for all PCB and mercury waste removed from the work area during the abatement process.

1.08 PROTECTION

A. Site Security:

1. The work area is to be restricted to authorized, trained, and protected personnel, including the Contractor's employees, any Subcontractors' employees, the authorized representative of the Director and any other designated individuals.

2. Entry to the work area by unauthorized individuals shall not be permitted without the express approval of the authorized representative of the Director. Any such entry shall be reported immediately to the authorized representative of the Director by the Contractor.

3. Subject to the approval of the authorized representative of the Director, the Contractor shall have control, of security in the work areas and areas surrounding the Contractor's equipment and materials.

B. Eating, drinking, applying make-up and using tobacco shall not be permitted within the work area.

PART 2 - PRODUCTS

2.01 EQUIPMENT

A. Respirators: Select respirators approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing PCB and mercury material. Respirators shall comply with the requirements of 29 CFR 1910.134.

B. Protective Clothing: Furnish personnel exposed to PCB and mercury material with fire-retardant, disposable protective whole body clothing, head covering, gloves, and foot coverings. Furnish disposable plastic or rubber gloves and footwear.

C. Chemical Safety Goggles: Furnish personnel exposed to PCB and mercury material with chemical safety goggles for eye protection.

D. Warning Signs and Labels: Warning signs shall be visibly posted at all approaches to the PCB and mercury control areas. Locate signs at such a distance that personnel may read the sign and take the necessary precautions before entering the area. Provide and affix labels to impermeable bags, PCB and mercury waste drums, and other containers containing PCB and mercury materials, scraps, waste, or debris. The labels shall be clearly legible. PCB labels shall display the following: "CAUTION: Contains PCBs (Polychlorinated Biphenyls)." mercury labels shall display the following: "Caution: Contains Mercury". Signs and labels shall comply with the requirements of 29 CFR 1910.145 and 40 CFR 761, Subpart C.

E. Furnish the authorized representative of the Director with two pairs of protective clothing daily, for entry to and inspection of the PCB control area. The personal protective equipment shall include respirators, disposable protective whole body covering including disposable rubber gloves, and chemical safety goggles.

F. PCB and Mercury Spill Kit: Assemble a spill kit to include several pairs of the following items:

1. Disposable coveralls, PCB impermeable aprons, and polyethylene gloves and foot covers;

2. Chemical safety glasses or face shields;

3. PCB caution signs displaying "PCB Spill -- Authorized Personnel Only;"

4. Mercury caution signs displaying "Mercury Spill -- Authorized Personnel Only;"

5. 100 foot caution tape;

6. Absorbent material;

7. Aspirator bulbs;

8. Disposable plastic dustpan;

9. Polyethylene waste bags;

10. Cloth backed tape;

11. PCB and mercury resistant sponges;

12. Paper and writing equipment; and

13. Non-breakable, wide-mouth waste containers with airtight-seal lids.

PART 3 - EXECUTION

3.01 WORK PROCEDURE

A. The Contractor shall furnish labor, materials, services, and equipment necessary for the removal of PCB-containing light ballasts, PCB contaminated light fixtures, and mercury-containing lamps located throughout the buildings in accordance with Federal, State and local regulations.

B. Personnel shall wear and use protective clothing and equipment as outlined in Section 2.01.

C. Eating, drinking, applying make-up or using tobacco shall not be permitted in the PCB and mercury control area.

D. No one shall be permitted in the PCB and mercury control areas unless the person is provided with appropriate training and protective equipment.

E. Personnel shall package and mark PCB and mercury materials as required by EPA, and DOT regulations and dispose of in accordance with all Federal, State, and local regulations.

F. PCBs shall not be exposed to open flames or other high temperature sources since toxic decomposition by-products may be produced.

G. Mercury-containing lamps shall not be broken since mercury may be released into the environment.

H. PCB and Mercury Control Area Requirements

1. Establish a PCB and mercury control area by roping off the area or providing curtains, portable partitions or other enclosures.

2. Except in instances of immanent danger, should the employees exiting the controlled area shall be required to remove their disposable coveralls and place them in an approved impermeable disposal bag.

I. The Monitoring Specialist shall perform daily inspections during the entire PCB, mercury and mercury removal operation. If any area is contaminated, the contaminated area shall be cleaned, and visually inspected.

3.02 WORK OPERATIONS

Ensure that work operations or procedures involving PCB, mercury or PCB-contaminated materials are conducted in accordance with 40 CFR 761 and the applicable requirements of this Specification, including but not limited to:

A. Obtaining suitable PCB and mercury-containing lamp storage sites;

B. Notifying the authorized representative of the Director prior to commencing the operation;

C. Reporting leaks and spills to HIDOH, EPA and to the authorized representative of the Director;

D. Cleaning up any spills;

E. Inspecting PCB and PCB-contaminated items and waste containers for leaks; and

F. Maintaining inspection, inventory and spill records.

3.03 PCB AND MERCURY REMOVAL PROCEDURES

A. Select PCB and mercury removal procedure that minimize contamination of work areas with PCB, mercury or other PCB contaminated debris/waste. Handle PCBs and mercury such that neither skin contact nor inhalation occurs. PCB and mercury removal procedures should be described in the work plan.

B. Removal of PCB-Containing Light Ballasts and Mercury Containing Lamps

1. Signs shall be visibly posted at a distance from the work area sufficient to permit a person to read the sign and take the necessary protective measures to avoid exposure.

2. All light fixtures shall be de-energized by a licensed electrician prior to the light fixture removal.

3. Workers shall wear rubber gloves, safety glasses, and other necessary personal protective equipment at all times during the light fixture removal process.

4. Remove light fixtures whole and intact. Remove PCB-containing ballasts whole and unleaking. Inspect all ballast labels. Ballasts labeled “No PCBs” shall be segregated from the hazardous waste stream and disposed of as normal demolition debris. Ballasts without the “No PCBs” label shall be assumed to contain PCBs.

5. Inspect light fixtures for leaks. Avoid ingestion and inhalation of, and contact with any material leaking from light ballasts. Dispose of the entire fixture as PCB contaminated waste if it is impossible and infeasible to clean the leaking light fixture ballast.

6. Remove, package and dispose of/recycle mercury containing lamps as specified in this section. Lamps shall be handled in a manner that prevents breakage. Inspect all lamp labels. Lamps labeled “No Mercury” shall be segregated from the hazardous waste stream and disposed of as normal demolition debris. Lamps without the “No Mercury” label shall be assumed to contain mercury.

3.04 PCB SPILL CLEANUP REQUIREMENTS

A. PCB Spills: Immediately report to HIDOH, EPA and the authorized representative of the Director any PCB spills or leaks.

B. PCB Spill Control Area: Rope off an area around the edges of any PCB leak or spill and post a “PCB Spill -- Authorized Personnel Only” caution sign. Immediately transfer leaking items to a drip pan or other container.

C. PCB Spill Cleanup: The PCB cleanup shall be in accordance with disposal requirements and procedures outlined in 40 CFR 761, SUBPART G. Initiate cleanup of spills as soon as possible, but no later than 24 hours after discovery. Cleanup personnel shall wear personal protective equipment specified in this specification. The spent absorbent and any other item that came in contact with PCBs shall be properly contained and disposed of as solid PCB waste.

D. Record and Certification: Document the cleanup with records of decontamination in accordance with 40 CFR 761, Section 125, Requirements for PCB Spill Cleanup. Provide certification of decontamination.

3.05 MERCURY LAMP DEBRIS CLEANUP REQUIREMENTS

A. Mercury Lamp Breakage: Immediately report to the authorized representative of the Director any mercury lamp breakage.

B. Mercury Lamp Debris Control Area: Rope off an area around the edges of any mercury lamp debris and post a “Mercury Spill -- Authorized Personnel Only” caution sign.

C. Mercury Lamp Debris Cleanup: The mercury lamp debris cleanup shall be in accordance with all applicable Federal, State and local regulations. Initiate cleanup of spills as soon as possible, but no later than 24 hours after discovery. Cleanup personnel shall wear gloves that prevent both mercury exposure and physical injury due to broken glass. All debris shall be placed in a non-breakable container with an airtight-seal lid. Any items that came in contact with the mercury lamp debris shall be cleaned, labeled and disposed of as mercury contaminated waste.

3.06 STORAGE FOR DISPOSAL

A. Storage Containers for PCBs: The Contractor shall comply with requirements and procedures outlined in 40 CFR 178. Store PCB in DOT Packing Group II containers.

B. Storage Containers for Mercury Lamps: The Contractor shall store mercury lamps in appropriate transport containers. The boxes shall be stored and labeled for transport in accordance with 40 CFR 262 and 40 CFR 263.

C. Labeling of Waste Containers: Label with the following:
   1. Date the item was placed in storage.

2. PCB Caution Label (i.e. ML label), conforming to paragraph entitled “PCB Caution Label.” 40 CFR 761 SUBPART C. Affix ML labels to PCB waste containers.

3. Label mercury-containing lamp waste in accordance with 49 CFR 172. Affix labels to all lighting waste containers.

3.07 APPROVAL OF TEMPORARY STORAGE SITE

A. Obtain approval from the authorized representative of the Director to store PCB and mercury materials and containers.

B. The following criteria shall be used to select a storage site. The storage sites shall have:

1. An adequate roof and walls to prevent rainwater from reaching the stored PCBs or mercury;

2. Smooth floors constructed of material impervious to PCBs and mercury.

3. No drain valves, floor drains, expansion joints, sewer lines or other openings that would permit liquids to flow from the controlled area.

4. Temporary onsite storage shall not exceed 10 working days from the end of removal work.

3.08 CLEANUP

A. Clean surfaces within PCB and mercury control areas daily. Do not allow PCB or mercury material, debris and dust to accumulate.

B. Restrict the spread of dust, debris, vapors and fumes; keep waste from being distributed over the general area.

C. Do not remove PCB and mercury control areas, roped-off perimeters or warning signs prior to the authorized representative of the Director’s certification. The authorized representative of the Director shall visually inspect the affected areas for any residual PCB and mercury material and accumulated dust before the removal of PCB and mercury controlled areas.

D. The Contractor shall re-clean areas showing dust or residual PCB or mercury material at no additional cost to the County.

3.09 DISPOSAL

A. PCB and mercury disposal shall comply with requirements and procedures outlined in 40 CFR 761 and 40 CFR 263. Local waste disposal facilities do not accept PCB and mercury wastes.

B. Identification Number: Federal regulations 40 CFR 761 and 40 CFR 263 require that generators, transporters, commercial storers, and disposers of PCB and mercury-containing waste possess U.S. EPA identification numbers.

C. Transporter Certification: Comply with disposal requirements and procedures outlined in 40 CFR 761 and 40 CFR 263. Before transporting the PCB and mercury lamp waste, sign and date the manifest acknowledging acceptance of the PCB and mercury-containing waste. The Contractor shall submit transporter certification of notification sent to EPA of PCB and lamp waste activities.

D. Certificate of Disposal and/or Recycling: Certificates for the disposal of mercury lamps, PCBs and PCB items, shall be submitted to the authorized representative of the Director within 30 days of the date of completion of disposal identified in the manifest was completed. Certificates of Disposal shall include:

1. The identity of the disposal and/or recycling facility, by name, address, and EPA identification number.

2. Identification of PCB and mercury waste affected by the Certificate of Disposal including reference to the shipment manifest number.

3. A statement certifying disposal and/or recycling of the identified PCB and/or mercury lamp waste that includes the date(s) of disposal, and the disposal process used.

4. A certification as defined in 40 CFR 761, Section 3.

3.10 MEASUREMENT AND PAYMENT

Payment for transportation and disposal of mercury wastes will not be made until a signed copy of the Certificate of Disposal is furnished to the authorized representative of the Director.

END OF SECTION

SECTION 13288 - TESTING/AIR MONITORING

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

A. As specified in Section 01010 - GENERAL REQUIREMENTS.

B. This section defines the Contractor responsibility for air monitoring and testing while conducting work which disturb lead-containing paint (LCP) or asbestos-containing materials (ACM).

1.02 SUMMARY

A. Testing and air monitoring shall be performed for the purpose of:

1. Verify compliance with the applicable codes, regulations and laws regarding working with LCP or asbestos.

2. Ensuring that the legally required documentation is collected.

3. Providing engineering control during project.

B. Testing and air monitoring shall be performed by an independent Industrial Hygiene (IH) firm retained by the Prime Contractor and with no affiliation with the Abatement Contractor for this project.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 CONTRACTOR RESPONSIBILITIES

A. The Contractor shall be responsible for submitting an asbestos and lead hazard control plan for review and approval.

B. The Contractor shall be responsible for providing the personal monitoring and necessary records for all of the Contractor's employees as required by OSHA (29 CFR 1926.1101), Hawaii State Law (12-145) and all other applicable laws.

C. The Contractor shall obtain the legally required documentation for air monitoring and respiratory protection program as part of the contract.

D. Monitoring data generated by the Contractor shall be made available for the use of the County at all times.

E. All costs involving additional air monitoring and testing due to failure to control lead or asbestos dust shall be borne by the Contractor, and shall be deducted from the final contract payment.

F. Any additional testing performed by the County shall be accommodated by the Contractor but shall not remove the Contractor's responsibility of monitoring required by law.

G. For final cleanup and decontamination following gross removal, remove the final polyethylene sheeting, leaving the coverings for temporary barriers, such as doors, windows, air ducts, etc.

H. Lead Clearance: The IH shall perform clearance of lead control areas by visual inspection. In settling any disputes, lead dust wipe samples shall be analyzed by EPA method SW 846-7420, or equivalent. Lead clearance criteria are less than 40 micrograms per square foot for uncarpeted floor and less than 250 micrograms per square foot for window sill.

I. Asbestos Clearance: If the daily personal air sample results do not exceed background levels or 0.01 f/cc, post abatement clearance air samples may not be required. The IH shall perform a visual clearance of asbestos removal areas; no visible dust or debris shall remain. If the daily personal air sample results exceed 0.01 f/cc, the industrial hygienist shall perform aggressive post abatement clearance.

3.02 TESTING/AIR MONITORING BY COUNTY

A. The County shall have the authority to stop work and to exercise engineering control during the project.

B. The County will be responsible for reviewing and approving the Contractor's asbestos and lead hazard control plan.

C. The County may conduct additional testing and air monitoring at its discretion. Any testing shall be accommodated by the Contractor.

END OF SECTION

SECTION 15450 - PLUMBING FIXTURES

PART - GENERAL

1.01 GENERAL CONDITIONS

As specified in Section 00700.

1.02 WORK SPECIFIED IN THIS SECTION

A. All materials, labor and equipment necessary for complete and operating interior plumbing fixtures.

B. A complete system of drain, waste and vent piping.

C. A complete hot water and cold water system including point of connection as indicated on drawings.

D. Plumbing fixtures, trims, and fittings specified.

E. Painting of exposed plumbing pipes and supports.

1.03 WORK SPECIFIED IN OTHER SECTIONS

Section 15000: General Mechanical and Plumbing Requirements.

Section 15250: Insulation of Mechanical Systems

Section 15400: Plumbing Piping and Specialities

Section 09900: Painting

Exterior excavation and backfill to be performed under site work section.

Exterior water, sewer and drain lines to be performed under site work section.

1.04 QUALITY ASSURANCE

A. Products of the following manufacturer's are acceptable in lieu of those specified hereinafter, subject to submittal and shop drawing requirements specified in Section 15000– General Mechanical and Plumbing requirements. All additional related work caused by the product installation and operational requirements shall be the contractors responsibility at no additional cost to the Owner.

1. Valves: Nibco, Stockholm.

2. Insulation: Owens Corning, Mansville, Certaineed.

3. Pipe Supports: Elceen, Fee and Mason, Grinnell, Unistrut.

4. Drainage System Specialties: Josam, Smith, Zurn, Precision Plumbing Products.

5. Fixtures and trims: American Standard, Kohler, Just, Elkay, Sloan, Chicago, Symmons.

B. Comply with the latest recommendations and requirements of the Codes and Standards listed hereafter in addition to detailed requirements of this specification. In the event of conflicting requirements, these specifications shall prevail.

American Society for Testing and Materials Publications (ASTM):

A120 Black and Hot Dipped Zinc Coated (Galvanized Welded and Seamless Steel Pipe for ordinary uses).

B88 Seamless Copper Water Tube.

American National Standards Institute Publications (ANSI):

B16.8 Cast-Bronze Solder-Joint Pressure Fittings with Addenda B16.18a-967.

B16.22 Wrought Copper and Bronze Solder-Joint Pressure Fittings.

B16.23 Cast-Bronze Fittings for Flared Copper Tubes.

B16.26 Wrought Copper and Wrought Copper Alloy Solder-Joint Drainage Fittings.

C1 National Electrical Code.

American Society of Mechanical Engineers (ASME):

ERRATA Boiler and Pressure Vessel Codes.

National Fire Protection Association Publication (NFPA):

255 Surface Burning Characteristics of Building Materials, Test Methods.

Underwriters' Laboratories Publications (UL):

732 Surface Burning Characteristics of Building Materials, tests for.

PART 2: PRODUCTS

2.01 GENERAL

A. Asbestos Prohibition:

1. No asbestos containing materials or equipment shall be used under this section.

2. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos free.

3. Contractor to have all fixtures and trim approved by the owner prior to ordering and installing.

2.02 PLUMBING FIXTURES

A. WATER CLOSET (WC-1)

Kohler Model K-4302 Highcrest Toilet, ADA, Vitreous china, 1.6 gallon flush. Elongated bowl design, 16-1/2" high, 1-1/2" top spud, bowl shall have 2-1/4" passageway.

Sloan Model 111 Flushometer with ADA compliant metal oscillation non-hold-open handle with triple seal packing. 1" I.P.S. screwdriver Bak-Chek angle stop. Adjustable tail piece.

Beneke Model 523 SS NCH heavy duty solid plastic seat for elongated bowl, with self-sustaining feature and check hinges.

BrassCraft Model No. KTCR19C ¼" turn ball valve, ½" nom. Comp. x 3/8" OD comp.

ProFlo Model No. PF146472 S.S. braided flexible connections.

ProFlo Model No. PFE7 5/8" OD Escutcheons.

ProFlo Model No. PFWRWH heavy duty wax bowl ring with horn.

PASCO Model No. 184 ¼" x 3-1/2" heavy S.S. closet bolt sets.

Material, construction, equipment and installation shall conform to ADAAG Section 604 Water Closets and Toilet Compartments.

B. WATER CLOSET (WC-2)

Kohler Model K-4350 Welcomme Toilet, Vitreous china, 1.6 gallon flush. Elongated bowl design, 14-3/4" high, 1-1/2" top spud, bowl shall have 2-1/4" passageway.

Sloan Model 111 Flushometer with metal oscillation non-hold-open handle with triple seal packing. 1" I.P.S. screwdriver Bak-Chek angle stop. Adjustable tail piece.

Beneke Model 523 SS NCH heavy duty solid plastic seat for elongated bowl, with self-sustaining feature and check hinges.

BrassCraft Model No. KTCR19C ¼" turn ball valve, ½" nom. Comp. x 3/8" OD comp.

ProFlo Model No. PF146472 S.S. braided flexible connections.

ProFlo Model No. PFE7 5/8" OD Escutcheons.

ProFlo Model No. PFWRWH heavy duty wax bowl ring with horn.

PASCO Model No. 184 ¼" x 3-1/2" heavy S.S. closet bolt sets.

C. LAVATORY (L-1)

Kohler K-2005 Wall Mounted ADA Compliant Lavatory, vitreous china, 4" centers, drilled for concealed arm carrier. Index hot water to cold water.

Kohler K-15593-F Coralais Centerset bathroom sink faucet – 4-1/2″ (114 mm) lever handle and flexible Connections. 0.5 gallons (1.9 L) per minute flow rate.

Kohler K-7129-A Bathroom sink grid drain with overflow. 1-1/4″ connection

ProFlo Model No. PFPTP101 P-Trap with 1-1/4" inlet and 1-1/2" outlet with slip joint and cleanout plug.

BrassCraft Model No. KTCR19C ¼" turn ball valve, ½" nom. Comp. x 3/8" OD comp.

ProFlo Model No. PF146323 S.S. braided flexible connections.

ProFlo Model No. PFE11 1-1/2" iron pipe (chrome plated) escutcheons.

ProFlo Model No. PFE7 5/8" OD copper escutcheons.

ProFlo Model No. PF201WH Lavatory Guard ADA conforming, wheelchair accessible lavatory under sink protective pipe cover.

Zurn Model No. Z1231 Concealed arm system wall carrier.

Material, construction, equipment and installation shall conform to ADAAG Section 606 Lavatories and Sinks.

D. LAVATORY (L-2)

Kohler K-2005 Wall Mounted Lavatory, vitreous china, 4" centers, drilled for concealed arm carrier. Index hot water to cold water.

Kohler K-15593-F Coralais Centerset bathroom sink faucet – 4-1/2″ (114 mm) lever handle and flexible Connections. 0.5 gallons (1.9 L) per minute flow rate.

Kohler K-7129-A Bathroom sink grid drain with overflow. 1-1/4″ connection

ProFlo Model No. PFPTP101 P-Trap with 1-1/4" inlet and 1-1/2" outlet with slip joint and cleanout plug.

BrassCraft Model No. KTCR19C ¼" turn ball valve, ½" nom. Comp. x 3/8" OD comp.

ProFlo Model No. PF146323 S.S. braided flexible connections.

ProFlo Model No. PFE11 1-1/2" iron pipe (chrome plated) escutcheons.

ProFlo Model No. PFE7 5/8" OD copper escutcheons.

Zurn Model No. Z1231 Concealed arm system wall carrier.

E. URINAL (UR-1)

Kohler K-4904-ET Bardon High Efficiency Urinal (HEU), ADA Compliant, 0.125 gallons per flush, vitreous china. Washout action, stall model with ¾" top stud inlet.

Sloan Optima Plus Model 8186-0.13, exposed, battery powered, sensor operated flushmeter with metal cover. ¾" adjustable tail piece, ¾" I.P.S. screwdriver BakChek angle stop.

Material, construction, equipment and installation shall conform to ADAAG Section 605 Urinals.

F. URINAL (UR-2)

Kohler K-4904-ET Bardon High Efficiency Urinal (HEU), ADA Compliant, 0.125 gallons per flush, vitreous china. Washout action, stall model with ¾" top stud inlet.

Sloan Optima Plus Model 8186-0.13, exposed, battery powered, sensor operated flushmeter with metal cover. ¾" adjustable tail piece, ¾" I.P.S. screwdriver BakChek angle stop.

G. SHOWER (SH-1)

Aquatic Model No. 6036BFSC ADA compliant cast Lucite cast acrylic shower with stainless steel U-shape grab bars (no shower seat), integral dome light,

hand-held shower assembly, with 24” slide bar, vacuum breaker and 60” hose, pressure balanced bath mixing valve, faucet, adjustable stop, mount controls at 36” inches AFF, soap dish, curtain rod, and shower curtain,.

Bobrick Model No. B-5181 reversible solid phenolic folding shower seat.

ProFlo Model No. PF140NC shower waste drain.

Material, construction, equipment and installation to conform to ADAAG Section 608 Shower Compartments.

H. LAUNDRY TUB

Fiat Model FL-1 floor mounted serv-a-sink, molded stone construction furnished with drain and stopper. White baked enamel angle legs. Model A-1 deck mounted faucet.

Dearborn No. 705-GBN P-Trap.

Brass Craft SCR3912-A loose key angle stop and riser.

PART 3: EXECUTION

3.01 EQUIPMENT SUBSTITUTIONS APPROVAL

A. Do not commence with installation until proposed equipment substitution submittals are approved.

3.02 FIXTURE INSTALLATION

A. Set all plumbing fixtures in an approved workmanlike manner. Point up edges against wall with approved caulking.

B. Flanges at wall penetrations shall be flush against wall and shall not spin when rotated by hand.

C. Adjust equipment and plumbing fixtures and trim to operate properly and clean all fixtures just prior to final inspection.

D. Provide individual accessible stop valves on all fixture and equipment supply piping.

E. All exposed metal parts, accessories and fittings associated with plumbing fixtures (including piping) shall be chrome finished unless another finish is specifically indicated otherwise. Provide polished chrome plated brass escutcheons at all exposed piping structure penetrations (wall, floor, ceiling, etc.) and fixture connections.

F. Furnish fixture carriers where specified to suit wall construction as indicated on Architectural Drawings. Carriers to be anchored securely to floor.

G. Install all fixtures according to manufacturer's recommendations.

H. Mounting heights of fixtures and associated equipment as indicated on Architectural Drawings.

I. Provide insulation on supply (full range of hot and cold water) and drain piping exposed below handicap access lavatories.

J. Coordinate with the General Contractor for installation of handicap access showers, etc., at required floor recesses.

K. Coordinate with the General Contractor where shower enclosures are furnished by the Plumbing Contractor with grab bars, seats, etc., to provide the required structural support for all items per the manufacturer's recommendations.

L. All handicap access fixture controls, including faucets and flush valves, to be provided with operators requiring 5 lb. pressure or less for operation.

M. Set limit stops on all shower mixing valves for maximum 110 degree Fahrenheit supply to shower heads.

END OF SECTION

SECTION 16512 - CEILING FANS

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

As specified in Section 00700.

1.02 SUMMARY

A. Provide and install ceiling fans, ceiling fan wall controller, raceways, mounting brackets, mounting bracket housing, and related work.

1.03 RELATED SECTIONS

A. Installation in accordance with Section 16000 -Electrical.

B. Section 07600 -Flashing and Sheet Metal. Fabrication of ceiling fan mounting bracket housing.

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01330 -Submittal Procedures and GENERAL CONDITIONS. Submittals shall be complete and clearly marked indicating compliance with these specifications. Partial submittals and submittals will not be accepted:
   1. CEILING FAN
      a. Manufacturer's product data indicating compliance with this specification.
      b. Energy Star, and UL certification or listing.
      c. Manufacturer's installation instructions.
      d. Manufacturer's guaranty/warranties in accordance with 1.05 GUARANTY AND WARRANTY.
      e. Maintenance Service Contract.

   2. CEILING FAN WALL CONTROL
      a. Manufacturer's product data indicating compliance with this specification.
      b. Manufacturer's installation instructions.
      c. UL certification or listing.

1.05 QUALITY ASSURANCE

A. Fans shall be provided with metal identification plates or adhesive labels permanently affixed in a conspicuous location identifying the manufacturer, model and model number.

B. Fans shall be U.L. listed. The U.L. label shall be firmly affixed to the fan.

C. Fans shall be Energy Star listed.

D. Fans shall be assembled and/or manufactured or distributed in the U.S.A. Imported fans and parts are acceptable provided they comply with the requirements of this specification and are distributed through an American based distributing/dealership company located in the State of Hawaii who shall be responsible for the execution of the fan's guaranty/warranty agreement.

E. The manufacturer or the American based distributing/manufacturing company shall be established company who has regularly engaged in the manufacture and/or distribution of ceiling fans for the past 10 years.

F. The fan distributor/manufacturer shall maintain an Authorized Service Center in the State of Hawaii. In addition, the service center shall maintain a local inventory of replacement and service parts.

1.06 GUARANTY AND WARRANTY

A. The Contractor shall furnish the following:

1. A written guaranty against all defects in materials, workmanship and installation. Contractor shall certify that he will correct any defects other than ordinary wear or improper use that may develop within one year from the date of project acceptance at no cost to the County.

2. Manufacturer's standard

1.07 TWO-YEAR MAINTENANCE SERVICE CONTRACT

A. The installer shall provide a Maintenance Service Contract, countersigned by the General Contractor.

B. Maintenance service shall provide for all labor, material, equipment and parts to service the ceiling fan and wall controller, on a periodic basis, so as to assure its proper operation and function. Such service shall include cleaning of the fan and blades, rebalancing of the blades, replacement of fans with excessive noise or wobble, remounting of loose fans, and replacement of faulty wall controllers.

C. The Maintenance Service Contract shall extend for a period of two (2) years commencing on the Project Acceptance Date. All costs for periodic maintenance services shall be included in the lump sum base bid price.

D. Maintenance Service Inspection report. Maintenance Service Contract shall include Maintenance Service report to the user agency. Maintenance Service Inspection report shall include the following information:
1. Name of person making the service call.
2. Date of the service call.
3. Time in and time out from the project.
4. Findings and work performed.

E. Inspection (service call) of fan and fan controller shall be completed within two weeks of user complaint of fan malfunction. If fan or controller cannot be repaired in one month installer shall install replacement fan or controller meeting these specifications within one month of inspection (service call).

F. The Maintenance Service Contract does not include repairs resulting from vandalism, negligent use or misuse of the equipment.

G. Periodic maintenance shall be performed on a yearly basis.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. The ceiling fans described in this Section shall be provided by a single manufacturer; mixing of materials produced by different manufacturers to satisfy the minimum requirements for this project is strictly prohibited.

1. For reasons of convenience and to establish minimum standard of quality, character, design aesthetics, performance and functional and experiential quality for this project. The products of the following manufacturers are incorporated into these Specifications along with general descriptions of the minimum required fencing and gate components.

a. The Basis-of-Design for the ceiling fans shall conform to Casablanca Fan Company, Lanai 53", or approved equal.

2. The products of other manufacturers not listed shall be pre-qualified in accordance with paragraph 6.2 SUBSTIUTION OF MATERIALS AND EQUIPMENT of the County's General Requirements and Covenants as amended by the Special Provisions.

a. The burden of proof as to the comparative quality and suitability of any alternate brand or make shall be upon the bidder, and it shall furnish, at its own expense, all information relating thereto at the time of making such a request. The County shall be the sole judge as to the suitability of the alternate brand or make, and its decision shall be final. Additionally, the requestor shall identify the components it proposes to use in satisfaction of the specific ceiling fans described in this Section. Approval of any substitution request does not inherently provide approval for deviations from any other requirement of the Section or of the project.

2.01 MATERIALS

A. CEILING FAN: Casablanca Fan Company, Lanai 53" or approved equal -three speed, 53" blade span with 16° blade pitch, ETL rated for wet locations, moisture resistant motor and enclosed housing, stainless steel hardware, energy star listed. Revolutions per minute at high speed 215 rpm at 90 watts with 53" blade span.

1. Minimum 5-blade type.

2. All-metal construction except for the fan blades.

3. SECONDARY SAFETY CABLE: Provide secondary safety cables for each fan. The safety cable shall be fastened to the hanger bracket and the structure that supports the outlet box. Fasteners shall be metal screws, studs or nuts and bolts. The cable and support screws shall be selected to support the entire weight of the fan.

4. Fan control wiring shall be located within the down rods protected from rotating parts.

5. Extension lead wires shall be of sufficient length to accommodate the required length of extension poles. Rewiring of the fan unit or splicing of the wires to increase the length is not acceptable.

6. FAN MOTOR: 188mm x 20mm minimum size with lubricated lifetime lubricated ball bearings, wobble free, silent operation, dynamically balanced rubber flywheel, heavy-gauge copper windings.

7. MOTOR HOUSING: Die-cast and steel construction.

8. SWITCH HOUSING: Heavy-duty, die-cast virgin zinc or steel.

9. Motor operation shall not interfere with radio or television operation.

10. BLADES: Casablanca All weather 21" B726 Badge Dark Walnut or approved equal. ABS with wood grain finish. Balanced within one gram of each other. Blades must be of same area or larger to specified blades.

11. BLADE HOLDERS: Heavy duty, reinforced die-cast virgin zinc, with rubber insulated blade fasteners. Balanced within one gram of each other.

12. FINISH: Electroplated, epoxy or power coated finish, provide a uniform finish that will not tarnish, rust and is scratch resistant.

B. CEILING FAN ACCESSORIES:

1. DOWN RODS: pipe of cold rolled or extruded steel with powder coated finish, specifically designed and manufactured to support the fan, nominal 5/8" minimum outside diameter, fastened directly to the motor housing.

2. Electrical Metal Tubing (EMT) and aluminum tubing is not acceptable.

3. Length of the hanger pipe shall be provided to meet the mounting heights indicated.

C. CEILING FAN WALL CONTROL

1. Three speed slide bar wall control designed for multiple fans, 5 amp rated. Four positions: off, low, medium, and high. With cover plate.

2. Switch shall be securely mounted in a standard, electrical metal wall box with cover plate flush on the outside of the wall.

PART 3 - EXECUTION

3.01 INSPECTION

A. The Contractor and the Installer shall examine the areas and conditions under which the ceiling fans are to be installed.

B. Should any condition be found unsuitable, no work shall be done until the unsatisfactory conditions have been corrected and are acceptable to the Installer. Proceeding with the work will imply acceptance of the conditions by the Installer.

3.02 INSTALLATION

A. Verify the roof/ceiling deck slope and mounting conditions. Install mounting plates as required to provide a solid, level and plumb surface for mounting of the outlet box. Mounting plates and outlet box shall be securely mounted and capable of supporting a minimum of 40 lbs. Only UL listed outlet boxes labeled "For Fan Support" shall be used. Provide secondary safety cable for each fan housing.

B. Fan motor shall be properly grounded.

C. Assemble and install the fans in accordance with the manufacturer's installation instructions and recommendations.

D. Fans shall be installed at the height as noted on the plans, but in no case shall a fan be mounted with the bottom of is blades lower than 7'-6" above the finished floor surface. Fans shall be installed so that fan blades are no closer than 18 inches from walls and finishes.

E. Fan blades shall be uniformly balanced and tightly fastened to the blade holders. Blade holders shall be tightly fastened to the flywheel or motor casing.

F. Fans shall be well balanced and shall not wobble or shake when running at all speeds. A maximum of 1/8" horizontal movement at the end of the fan blades is acceptable.

3.03 INSTRUCTION TO PERSONNEL

A. Instruct the operations personnel in the aspects of safety, operations and maintenance of the fans.

3.04 FIELD QUALITY CONTROL

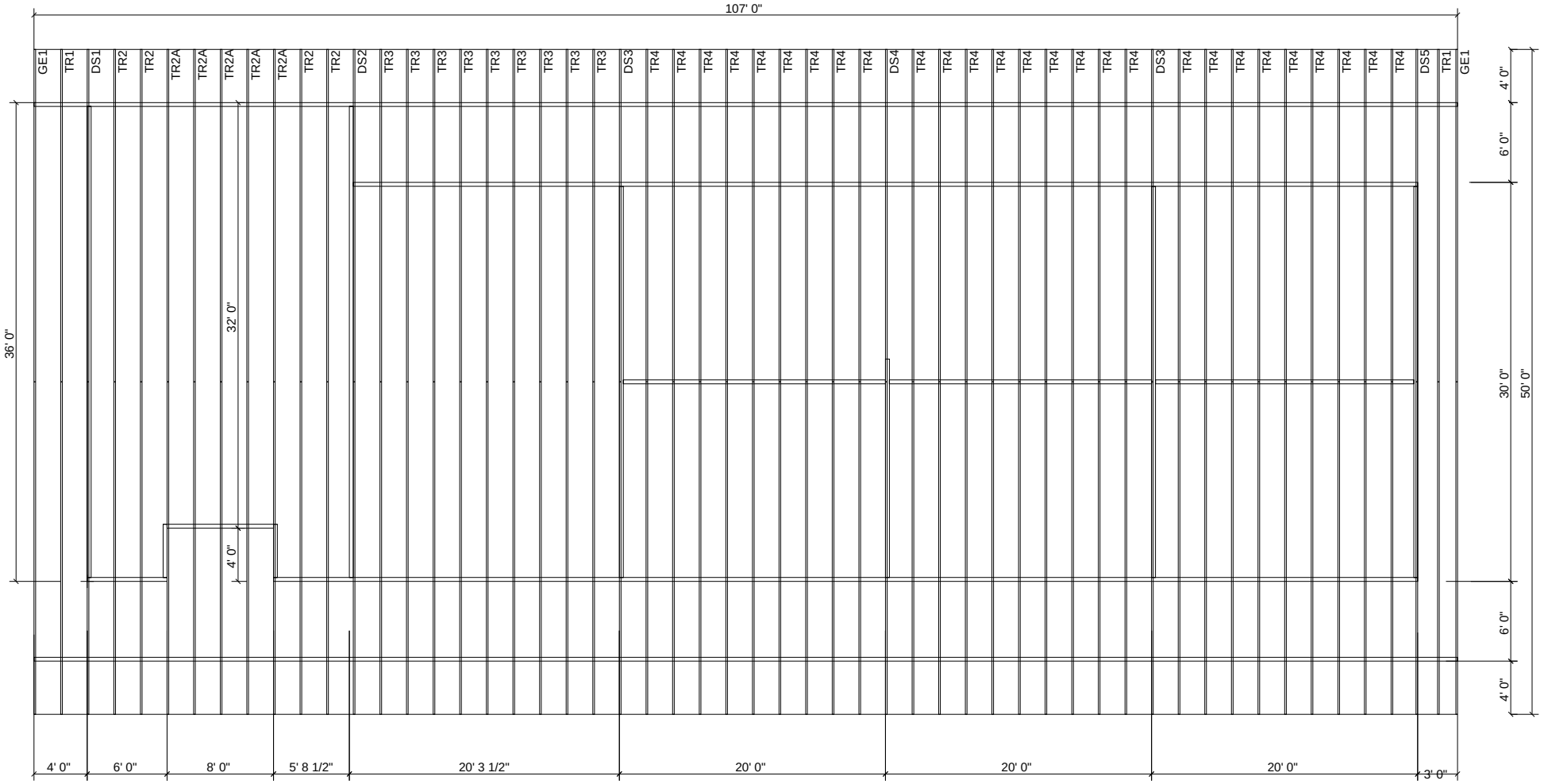
A. Operational Test: Perform an operational test as required by the manufacturer in the presence of the Contracting Officer. Each fan unit shall be operated at low, medium and high speeds to demonstrate no wobble operation. Any fans that wobble more than *1/8"* horizontal movement shall be repaired, rebalanced and adjusted until satisfactory operation is obtained.

3.05 CLEANING

A. Prior to acceptance of the work, thoroughly clean the fan unit and the surrounding area.

B. Patch *and/or* paint any surface marred or damaged as a result of the fan installation.

END OF SECTION



HPM BUILDING SUPPLY	Job Name: **Edith Kanaka'ole**	
	TMK # /Site address: (3)2-2-033:001	
HPM TRUSS DEPT 16-166 MELEKAHIWA ST. KEAAU, HI 96749 PHONE: 808-966-5686	Model: Multi-Purpose Stadium addition	
	Date: 11/08/12	Designer: S.Lane

Job	Truss	Truss Type	Qty	Ply	Edith Kanaka'ole
HSL121313	DS1	ROOF TRUSS	1	1	bow Job Reference (optional)

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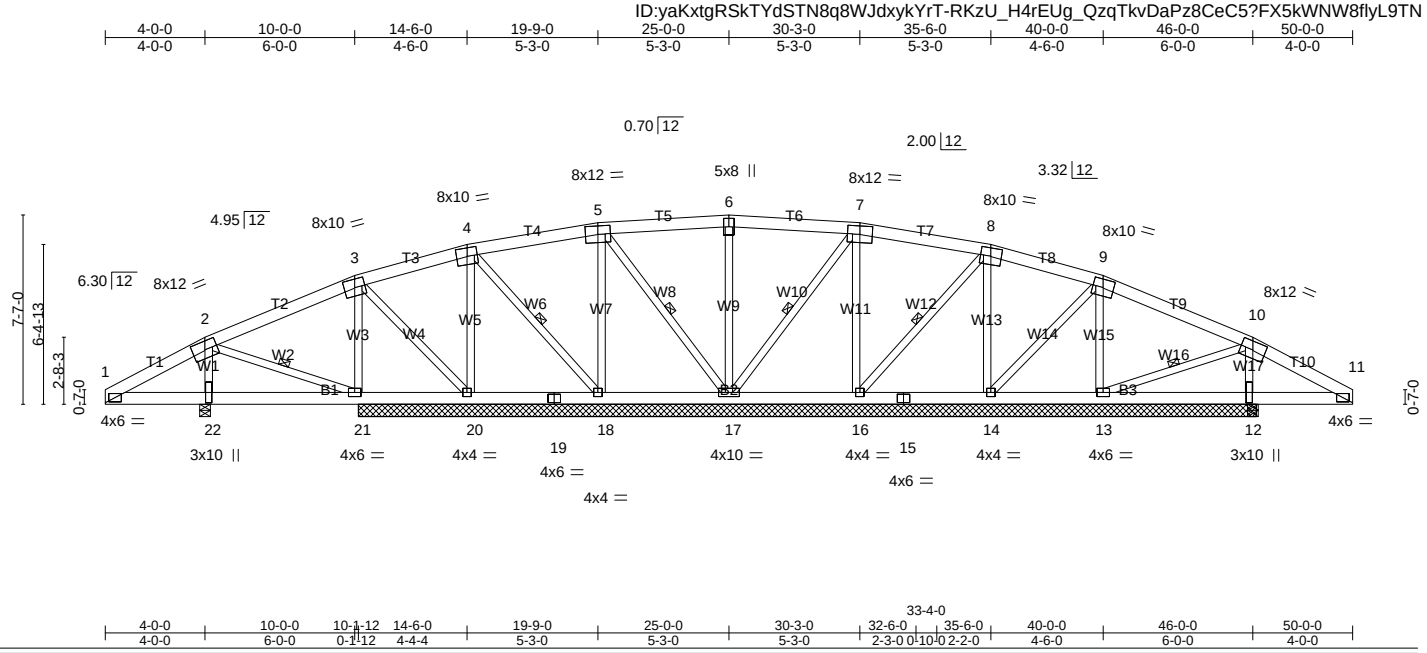

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	L/d	PLATES	GRIP
TCLL	20.0	Plates Increase	1.25	TC	0.33	Vert(LL)	0.01	12-13	>999	240	MT20	220/195
TCDL	8.0	Lumber Increase	1.25	BC	0.20	Vert(TL)	-0.01	12-13	>999	240		
BCLL	0.0	Rep Stress Incr	NO	WB	0.82	Horz(TL)	0.02	12	n/a	n/a		
BCDL	8.0	Code	IBC2006/TPI2002	(Matrix)							Weight: 360 lb	FT = 0%

LUMBER

TOP CHORD	2x6 DF No.2 G
BOT CHORD	2x6 DF No.1 G
WEBS	2x4 DF Std G

BRACING

TOP CHORD	Structural wood sheathing directly applied or 6-0-0 oc purlins.
BOT CHORD	Rigid ceiling directly applied or 6-0-0 oc bracing.
WEBS	1 Row at midpt 2-21, 4-18, 8-16, 10-13, 5-17, 7-17

MiTek recommends that Stabilizers and required cross bracing be installed during truss erection, in accordance with Stabilizer Installation guide.

REACTIONS All bearings 36-0-0 except (jt=length) 22=0-5-2, 12=0-5-2, 12=0-5-2.

(lb) - Max Horz 22=-57(LC 11)

Max Uplift All uplift 100 lb or less at joint(s) except 22=-1672(LC 6), 21=-564(LC 6), 20=-260(LC 6), 18=-166(LC 6), 17=-349(LC 7), 16=-230(LC 6), 14=-174(LC 6), 13=-520(LC 7), 12=-1870(LC 7)

Max Grav All reactions 250 lb or less at joint(s) except 22=1750(LC 12), 21=731(LC 12), 20=402(LC 12), 18=344(LC 12), 17=561(LC 4), 16=408(LC 13), 14=316(LC 13), 13=687(LC 11), 12=1948(LC 11), 12=561(LC 1)

FORCES (lb) - Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.

TOP CHORD	1-2=-804/828, 2-3=-958/907, 7-8=-1072/1179, 8-9=-1094/1155, 10-11=-789/812, 4-5=-742/849, 3-4=-767/828, 9-10=-1228/1177, 5-6=-523/716, 6-7=-833/1025
BOT CHORD	1-22=-216/300, 21-22=-273/353, 20-21=-1343/1481, 19-20=-1227/1388, 18-19=-322/483, 17-18=-906/1079, 16-17=-1014/1187, 15-16=-665/826, 14-15=-450/611, 13-14=-497/635, 12-13=-1364/1444, 11-12=-231/315
WEBS	2-22=-1611/1560, 2-21=-1608/1685, 3-21=-1240/1175, 3-20=-1081/1115, 4-20=-1077/999, 4-18=-1033/1053, 6-17=-333/227, 8-16=-1048/1068, 8-14=-1056/978, 9-14=-1178/1213, 9-13=-1289/1224, 10-12=-1800/1749, 10-13=-1870/1947, 5-18=-975/888, 7-16=-916/829, 5-17=-1011/1007, 7-17=-982/978

NOTES (8)

1) Unbalanced roof live loads have been considered for this design.
2) Wind: ASCE 7-05; 105mph; TCDL=4.8psf; BCDL=3.0psf; h=15ft; Cat. II; Exp C; enclosed; C-C Exterior(2); cantilever left and right exposed ; end vertical left and right exposed; Lumber DOL=1.33 plate grip DOL=1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 1672 lb uplift at joint 22, 564 lb uplift at joint 21, 260 lb uplift at joint 20, 166 lb uplift at joint 18, 349 lb uplift at joint 17, 230 lb uplift at joint 16, 174 lb uplift at joint 14, 520 lb uplift at joint 13 and 1870 lb uplift at joint 12.
6) This truss is designed in accordance with the 2006 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
7) This truss has been designed for a total drag load of 138 plf. Lumber DOL=(1.33) Plate grip DOL=(1.33) Connect truss to resist drag loads along bottom chord from 10-0-0 to 46-0-0 for 191.7 plf.
8) Truss designs and specifications are for the proprietary use by HPM Ltd. and their designates. All designs and specifications are only valid when used in conjunction with HPM manufacturing processes, quality control procedures, equipment and materials.

LOAD CASE(S) Standard

Job	Truss	Truss Type	Qty	Ply	Edith Kanaka'ole
HSL121313	DS2	ROOF TRUSS	1	1	bow Job Reference (optional)

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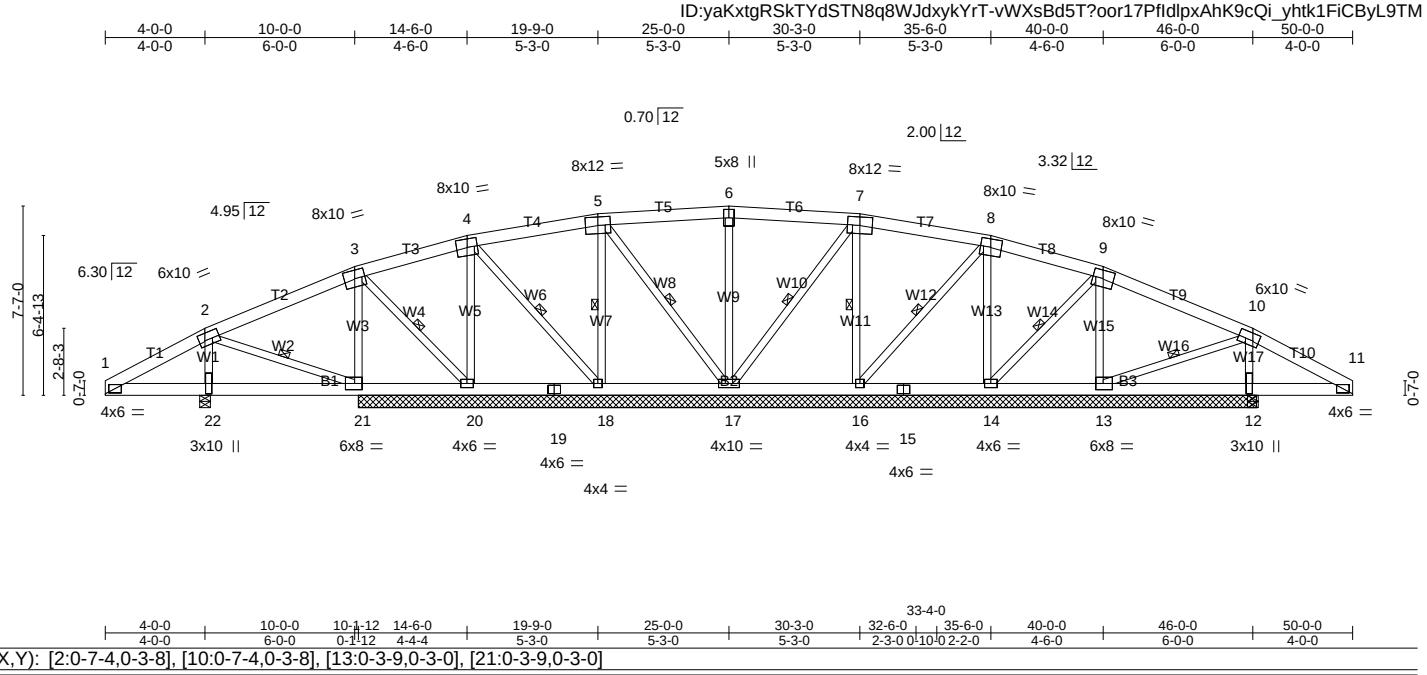

Plate Offsets (X,Y): [2:0-7-4,0-3-8], [10:0-7-4,0-3-8], [13:0-3-9,0-3-0], [21:0-3-9,0-3-0]

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	L/d	PLATES	GRIP
TCLL	20.0	Plates Increase	1.25	TC	0.54	Vert(LL)	-0.02	12-13	>999	240	MT20	220/195
TCDL	8.0	Lumber Increase	1.25	BC	0.30	Vert(TL)	-0.02	12-13	>999	240		
BCLL	0.0	Rep Stress Incr	NO	WB	0.92	Horz(TL)	0.03	12	n/a	n/a		
BCDL	8.0	Code	IBC2006/TPI2002	(Matrix)							Weight: 360 lb	FT = 0%

LUMBER

TOP CHORD 2x6 DF No.2 G
BOT CHORD 2x6 DF No.1 G
WEBS 2x4 DF Std G *Except*
W1,W2,W17,W16: 2x4 DF No.1 G

BRACING

TOP CHORD Structural wood sheathing directly applied or 5-1-3 oc purlins.
BOT CHORD Rigid ceiling directly applied or 5-4-1 oc bracing.
WEBS 1 Row at midpt 2-21, 3-20, 4-18, 8-16, 9-14, 10-13, 5-18, 7-16, 5-17, 7-17

MiTek recommends that Stabilizers and required cross bracing be installed during truss erection, in accordance with Stabilizer Installation guide.

REACTIONS All bearings 36-0-0 except (jt=length) 22=0-5-2, 12=0-5-2, 12=0-5-2.
(lb) - Max Horz 22=-143(LC 11)
Max Uplift All uplift 100 lb or less at joint(s) except 22=-2606(LC 6), 21=-676(LC 6), 20=-326(LC 6), 18=-173(LC 6), 17=-352(LC 7), 16=-268(LC 6), 14=-185(LC 7), 13=-578(LC 7), 12=-2951(LC 7)
Max Grav All reactions 250 lb or less at joint(s) except 22=2687(LC 12), 21=838(LC 12), 20=469(LC 12), 18=351(LC 12), 17=564(LC 4), 16=447(LC 13), 14=327(LC 11), 13=741(LC 11), 12=3033(LC 11), 12=573(LC 1)

FORCES (lb) - Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.
TOP CHORD 1-2=-1209/1232, 2-3=-1757/1702, 7-8=-1866/1972, 8-9=-1933/1991, 10-11=-1185/1209, 4-5=-1310/1417, 3-4=-1378/1437, 9-10=-2229/2174, 5-6=-911/1102, 6-7=-1433/1623
BOT CHORD 1-22=-245/328, 21-22=-394/473, 20-21=-2327/2324, 19-20=-2060/2224, 18-19=-728/701, 17-18=-1459/1635, 16-17=-1585/1760, 15-16=-976/1140, 14-15=-805/969, 13-14=-967/965, 12-13=-1991/2264, 11-12=-268/351
WEBS 2-22=-2533/2479, 2-21=-2826/2908, 3-21=-1768/1706, 3-20=-1720/1753, 4-20=-1582/1506, 4-18=-1652/1671, 6-17=-345/239, 8-16=-1671/1690, 8-14=-1541/1465, 9-14=-1866/1898, 9-13=-1834/1772, 10-12=-2866/2811, 10-13=-3287/3369, 5-18=-1435/1349, 7-16=-1335/1250, 5-17=-1581/1578, 7-17=-1533/1529

NOTES (8)

1) Unbalanced roof live loads have been considered for this design.
2) Wind: ASCE 7-05; 105mph; TCDL=4.8psf; BCDL=3.0psf; h=15ft; Cat. II; Exp C; enclosed; C-C Exterior(2); cantilever left and right exposed ; end vertical left and right exposed; Lumber DOL=1.33 plate grip DOL=1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 2606 lb uplift at joint 22, 676 lb uplift at joint 21, 326 lb uplift at joint 20, 173 lb uplift at joint 18, 352 lb uplift at joint 17, 268 lb uplift at joint 16, 185 lb uplift at joint 14, 578 lb uplift at joint 13 and 2951 lb uplift at joint 12.
6) This truss is designed in accordance with the 2006 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
7) This truss has been designed for a total drag load of 233 plf. Lumber DOL=(1.33) Plate grip DOL=(1.33) Connect truss to resist drag loads along bottom chord from 9-10-4 to 46-0-0 for 322.3 plf.
8) Truss designs and specifications are for the proprietary use by HPM Ltd. and their designates. All designs and specifications are only valid when used in conjunction with HPM manufacturing processes, quality control procedures, equipment and materials.

LOAD CASE(S) Standard

Job	Truss	Truss Type	Qty	Ply	Edith Kanaka'ole
HSL121313	DS3	ROOF TRUSS	2	1	bow Job Reference (optional)

HPM Building Supply, Keaau, HI 96749, Sandy Lane — 7.350 s Jul 10 2012 MiTek Industries, Inc. Thu Nov 08 14:47:36 2012 Page 1

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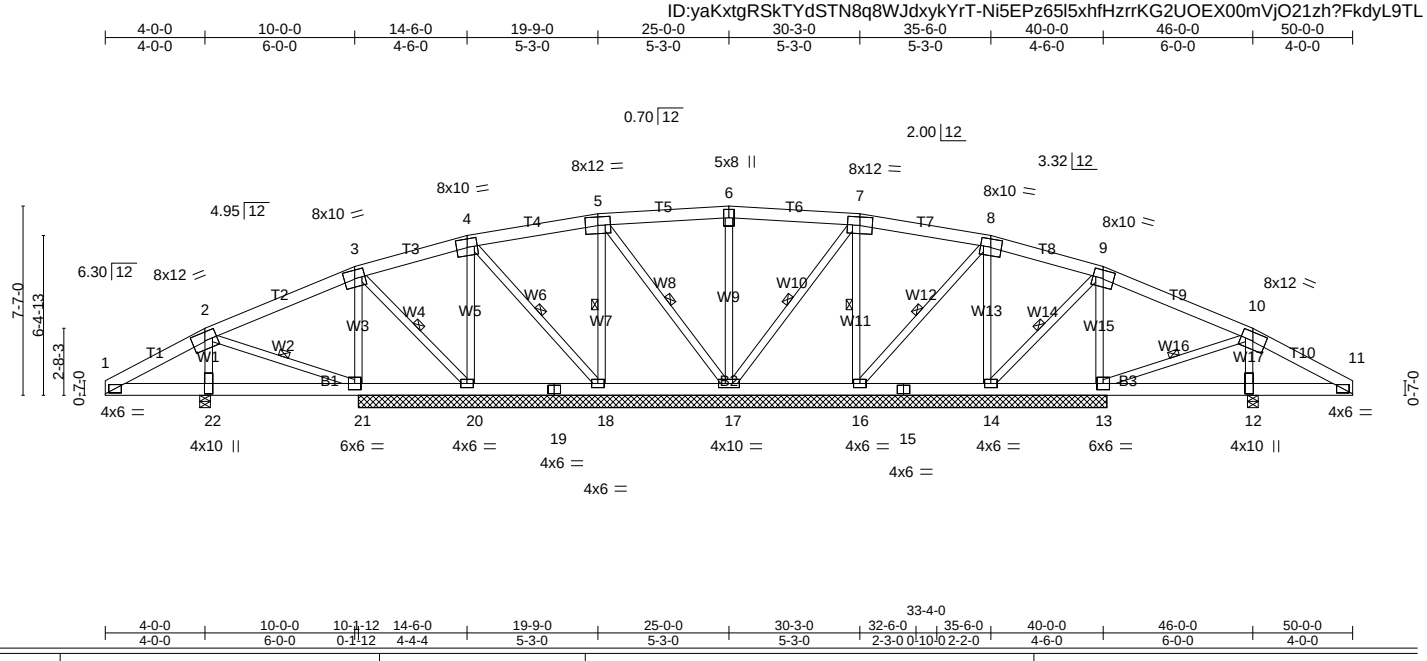


LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	L/d	PLATES	GRIP
TCLL	20.0	Plates Increase	1.25	TC	0.40	Vert(LL)	0.01	21-22	>999	240	MT20	220/195
TCDL	8.0	Lumber Increase	1.25	BC	0.27	Vert(TL)	-0.02	21-22	>999	240		
BCLL	0.0	Rep Stress Incr	NO	WB	0.98	Horz(TL)	0.01	16	n/a	n/a		
BCDL	8.0	Code	IBC2006/TPI2002	(Matrix)							Weight: 360 lb	FT = 0%

LUMBER
TOP CHORD 2x6 DF No.2 G
BOT CHORD 2x6 DF No.1 G
WEBS 2x4 DF Std G *Except*
W2,W16: 2x4 DF No.1 G

BRACING
TOP CHORD Structural wood sheathing directly applied or 5-8-1 oc purlins.
BOT CHORD Rigid ceiling directly applied or 5-1-4 oc bracing.
WEBS 1 Row at midpt 2-21, 3-20, 4-18, 8-16, 9-14, 10-13, 5-18, 7-16, 5-17, 7-17

MiTek recommends that Stabilizers and required cross bracing be installed during truss erection, in accordance with Stabilizer Installation guide.

REACTIONS All bearings 30-0-0 except (jt=length) 22=0-5-2, 12=0-5-2.
(lb) - Max Horz 22=-171(LC 11)
Max Uplift All uplift 100 lb or less at joint(s) except 22=-2693(LC 6), 21=-732(LC 6), 20=-292(LC 6), 18=-209(LC 7), 17=-345(LC 6), 16=-198(LC 6), 14=-306(LC 7), 13=-741(LC 7), 12=-2660(LC 7)
Max Grav All reactions 250 lb or less at joint(s) except 22=2774(LC 12), 21=895(LC 12), 20=435(LC 12), 18=388(LC 10), 17=557(LC 5), 16=377(LC 13), 14=448(LC 11), 13=904(LC 11), 12=2742(LC 11)

FORCES (lb) - Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.
TOP CHORD 1-2=-1202/1226, 2-3=-1876/1821, 7-8=-1516/1622, 8-9=-1529/1587, 10-11=-1206/1229, 4-5=-1569/1675, 3-4=-1581/1639, 9-10=-1831/1777, 5-6=-1199/1390, 6-7=-1150/1341
BOT CHORD 1-22=-250/333, 21-22=-422/502, 20-21=-2416/2384, 19-20=-1945/2109, 18-19=-390/344, 17-18=-1071/1246, 16-17=-1185/1360, 15-16=-510/403, 14-15=-2066/2229, 13-14=-2546/2515, 12-13=-252/332, 11-12=-247/330
WEBS 2-22=-2615/2560, 2-21=-2943/3024, 3-21=-1867/1804, 3-20=-1841/1873, 4-20=-1637/1561, 4-18=-1739/1759, 6-17=-318/211, 8-16=-1738/1757, 8-14=-1641/1564, 9-14=-1826/1859, 9-13=-1860/1798, 10-12=-2584/2530, 10-13=-2901/2982, 5-18=-1446/1360, 7-16=-1455/1369, 5-17=-1627/1623, 7-17=-1631/1628

NOTES (8)
1) Unbalanced roof live loads have been considered for this design.
2) Wind: ASCE 7-05; 105mph; TCDL=4.8psf; BCDL=3.0psf; h=15ft; Cat. II; Exp C; enclosed; C-C Exterior(2); cantilever left and right exposed ; end vertical left and right exposed; Lumber DOL=1.33 plate grip DOL=1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 2693 lb uplift at joint 22, 732 lb uplift at joint 21, 292 lb uplift at joint 20, 209 lb uplift at joint 18, 345 lb uplift at joint 17, 198 lb uplift at joint 16, 306 lb uplift at joint 14, 741 lb uplift at joint 13 and 2660 lb uplift at joint 12.
6) This truss is designed in accordance with the 2006 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
7) This truss has been designed for a total drag load of 233 plf. Lumber DOL=(1.33) Plate grip DOL=(1.33) Connect truss to resist drag loads along bottom chord from 9-10-4 to 40-0-0 for 386.5 plf.
8) Truss designs and specifications are for the proprietary use by HPM Ltd. and their designates. All designs and specifications are only valid when used in conjunction with HPM manufacturing processes, quality control procedures, equipment and materials.

LOAD CASE(S) Standard

Job	Truss	Truss Type	Qty	Ply	Edith Kanaka'ole
HSL121313	DS4	ROOF TRUSS	1	1	bow Job Reference (optional)

HPM Building Supply, Keaau, HI 96749, Sandy Lane — 7.350 s Jul 10 2012 MiTek Industries, Inc. Thu Nov 08 14:47:37 2012 Page 1

ID:yaKxtgRSkTYdSTN8q8WJdxykYrT-ruedcJ6jWP3YHRY1P1nH0bmeoQ4cSrtACLkoG3yL9TK

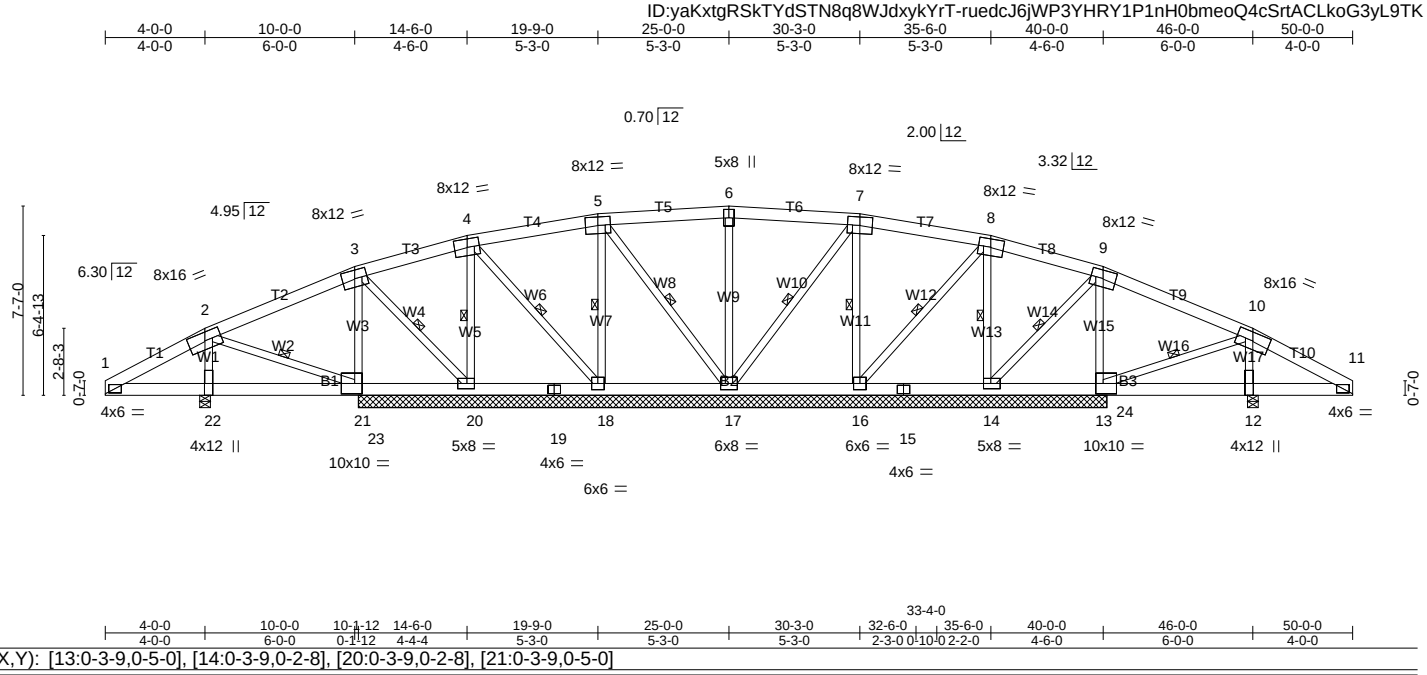


Plate Offsets (X,Y): [13:0-3-9,0-5-0], [14:0-3-9,0-2-8], [20:0-3-9,0-2-8], [21:0-3-9,0-5-0]

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	L/d	PLATES	GRIP
TCLL	20.0	Plates Increase	1.25	TC	0.66	Vert(LL)	0.02	12-13	>999	240	MT20	220/195
TCDL	8.0	Lumber Increase	1.25	BC	0.40	Vert(TL)	-0.02	12-13	>999	240		
BCLL	0.0	Rep Stress Incr	NO	WB	1.00	Horz(TL)	0.02	16	n/a	n/a		
BCDL	8.0	Code	IBC2006/TPI2002	(Matrix)							Weight: 360 lb	FT = 0%

LUMBER

TOP CHORD 2x6 DF No.2 G
BOT CHORD 2x6 DF No.1 G
WEBS 2x4 DF No.1 G *Except*
W5,W9,W13,W7,W11,W8,W10: 2x4 DF Std G

BRACING

TOP CHORD Structural wood sheathing directly applied or 4-4-9 oc purlins.
BOT CHORD Rigid ceiling directly applied or 4-1-10 oc bracing.
WEBS 1 Row at midpt 2-21, 3-20, 4-20, 4-18, 8-16, 8-14, 9-14, 10-13, 5-18, 7-16, 5-17, 7-17

MiTek recommends that Stabilizers and required cross bracing be installed during truss erection, in accordance with Stabilizer Installation guide.

REACTIONS All bearings 30-0-0 except (jt=length) 22=0-5-2, 12=0-5-2.
(lb) - Max Uplift All uplift 100 lb or less at joint(s) except 22=-4044(LC 6), 21=-1545(LC 6), 20=-249(LC 6), 18=-462(LC 7), 17=-345(LC 7), 16=-477(LC 6), 14=-228(LC 7), 13=-1535(LC 7), 12=-4089(LC 7)
Max Grav All reactions 250 lb or less at joint(s) except 22=4122(LC 12), 21=1716(LC 12), 20=387(LC 12), 18=638(LC 4), 17=557(LC 4), 16=654(LC 5), 14=366(LC 11), 13=1706(LC 11), 12=4168(LC 11)

FORCES (lb) - Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.
TOP CHORD 1-2=-1901/1925, 2-3=-2888/2837, 7-8=-2789/2892, 8-9=-2715/2772, 10-11=-1899/1922, 4-5=-2713/2817, 3-4=-2640/2697, 9-10=-2950/2899, 5-6=-2000/2188, 6-7=-2070/2258
BOT CHORD 1-22=-299/382, 22-23=-293/373, 21-23=-432/681, 20-21=-3822/3675, 19-20=-3284/3450, 18-19=-899/428, 17-18=-1944/2121, 16-17=-1779/1956, 15-16=-732/261, 14-15=-3117/3283, 13-14=-3640/3492, 13-24=-696/921, 12-24=-294/374, 11-12=-301/384
WEBS 2-22=-3937/3885, 2-21=-4676/4754, 3-21=-3287/3218, 3-20=-3400/3437, 4-20=-2708/2631, 4-18=-3051/3071, 6-17=-318/212, 8-16=-3053/3074, 8-14=-2703/2625, 9-14=-3421/3459, 9-13=-3298/3229, 10-12=-3982/3930, 10-13=-4738/4816, 5-18=-2163/2079, 7-16=-2150/2065, 5-17=-2534/2529, 7-17=-2527/2523

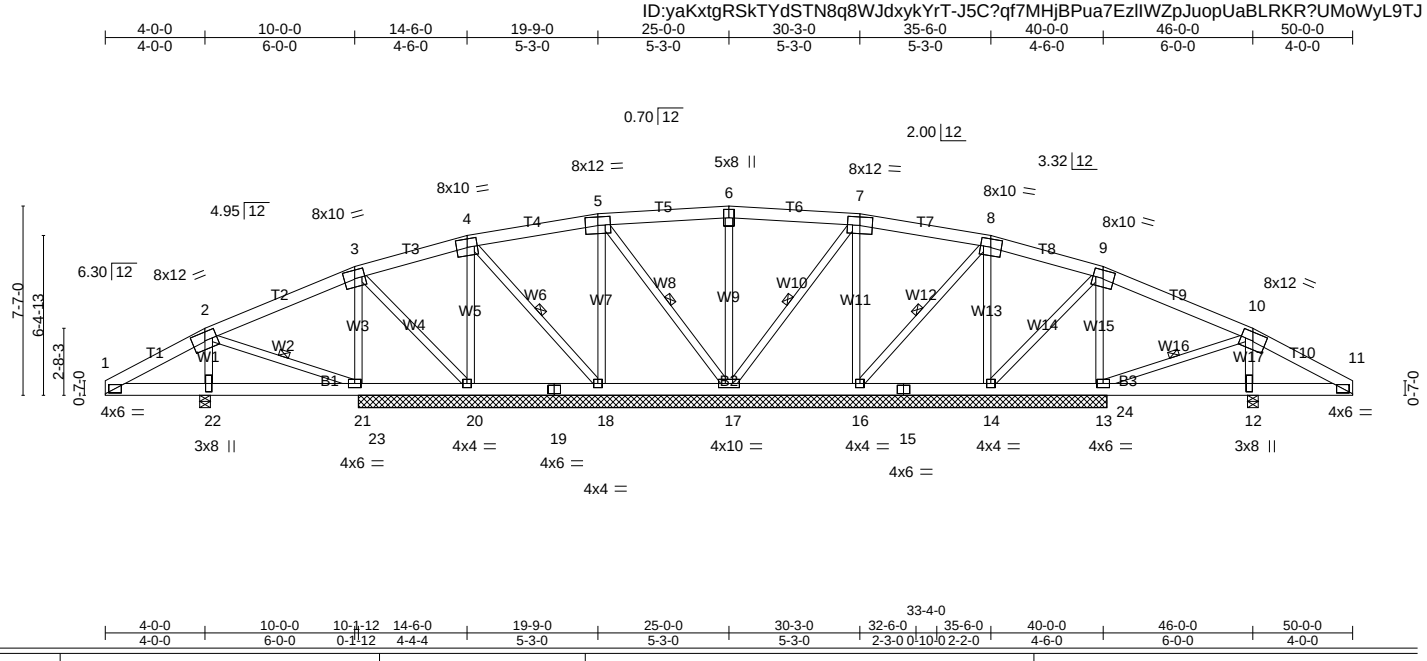
NOTES (8)
1) Unbalanced roof live loads have been considered for this design.
2) Wind: ASCE 7-05; 105mph; TCDL=4.8psf; BCDL=3.0psf; h=15ft; Cat. II; Exp C; enclosed; C-C Exterior(2); cantilever left and right exposed ; end vertical left and right exposed; Lumber DOL=1.33 plate grip DOL=1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 4044 lb uplift at joint 22, 1545 lb uplift at joint 21 , 249 lb uplift at joint 20, 462 lb uplift at joint 18, 345 lb uplift at joint 17, 477 lb uplift at joint 16, 228 lb uplift at joint 14, 1535 lb uplift at joint 13 and 4089 lb uplift at joint 12.
6) This truss is designed in accordance with the 2006 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
7) This truss has been designed for a total drag load of 397 plf. Lumber DOL=(1.33) Plate grip DOL=(1.33) Connect truss to resist drag loads along bottom chord from 9-8-0 to 40-8-8 for 639.5 plf.
8) Truss designs and specifications are for the proprietary use by HPM Ltd. and their designates. All designs and specifications are only valid when used in conjunction with HPM manufacturing processes, quality control procedures, equipment and materials.

LOAD CASE(S) Standard

Job	Truss	Truss Type	Qty	Ply	Edith Kanaka'ole
HSL121313	DS5	ROOF TRUSS	1	1	bow Job Reference (optional)

HPM Building Supply, Keaau, HI 96749, Sandy Lane — 7.350 s Jul 10 2012 MiTek Industries, Inc. Thu Nov 08 14:47:38 2012 Page 1

ID:yaKxtgRSkTYdSTN8q8WJdxykYrT-J5C?qf7MHjBPua7EzlIWZpJuopUaBLRKR?UMoWyL9TJ



LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	L/d	PLATES	GRIP
TCLL	20.0	Plates Increase	1.25	TC	0.32	Vert(LL)	0.01	12-13	>999	240	MT20	220/195
TCDL	8.0	Lumber Increase	1.25	BC	0.16	Vert(TL)	-0.01	12-13	>999	240		
BCLL	0.0	Rep Stress Incr	NO	WB	0.79	Horz(TL)	0.01	16	n/a	n/a		
BCDL	8.0	Code	IBC2006/TPI2002	(Matrix)							Weight: 360 lb	FT = 0%

LUMBER
TOP CHORD 2x6 DF No.2 G
BOT CHORD 2x6 DF No.1 G
WEBS 2x4 DF Std G

BRACING
TOP CHORD Structural wood sheathing directly applied or 6-0-0 oc purlins.
BOT CHORD Rigid ceiling directly applied or 6-0-0 oc bracing.
WEBS 1 Row at midpt 2-21, 4-18, 8-16, 10-13, 5-17, 7-17

MiTek recommends that Stabilizers and required cross bracing be installed during truss erection, in accordance with Stabilizer Installation guide.

REACTIONS All bearings 30-0-0 except (jt=length) 22=0-5-2, 12=0-5-2.
(lb) - Max Uplift All uplift 100 lb or less at joint(s) except 22=-1727(LC 6), 21=-578(LC 6), 20=-241(LC 6), 18=-187(LC 7), 17=-344(LC 7), 16=-193(LC 6), 14=-234(LC 7), 13=-574(LC 7), 12=-1743(LC 7)
Max Grav All reactions 250 lb or less at joint(s) except 22=1805(LC 12), 21=745(LC 12), 20=383(LC 12), 18=366(LC 10), 17=556(LC 4), 16=372(LC 13), 14=376(LC 11), 13=741(LC 11), 12=1822(LC 11)

FORCES (lb) - Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.
TOP CHORD 1-2=-802/826, 2-3=-1032/981, 7-8=-903/1010, 8-9=-905/966, 10-11=-802/825, 4-5=-875/982, 3-4=-877/938, 9-10=-1055/1004, 5-6=-665/857, 6-7=-691/884
BOT CHORD 1-22=-218/302, 22-23=-218/298, 21-23=-316/396, 20-21=-1369/1508, 19-20=-1153/1314, 18-19=-125/286, 17-18=-694/867, 16-17=-681/854, 15-16=-191/352, 14-15=-1087/1248, 13-14=-1297/1436, 13-24=-409/489, 12-24=-218/298, 11-12=-219/302
WEBS 2-22=-1665/1613, 2-21=-1683/1760, 3-21=-1279/1214, 3-20=-1136/1171, 4-20=-1097/1019, 4-18=-1071/1091, 6-17=-317/210, 8-16=-1073/1093, 8-14=-1095/1018, 9-14=-1144/1179, 9-13=-1284/1218, 10-12=-1681/1629, 10-13=-1706/1783, 5-18=-975/888, 7-16=-970/883, 5-17=-1028/1024, 7-17=-1025/1022

NOTES (8)
1) Unbalanced roof live loads have been considered for this design.
2) Wind: ASCE 7-05; 105mph; TCDL=4.8psf; BCDL=3.0psf; h=15ft; Cat. II; Exp C; enclosed; C-C Exterior(2); cantilever left and right exposed ; end vertical left and right exposed; Lumber DOL=1.33 plate grip DOL=1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 1727 lb uplift at joint 22, 578 lb uplift at joint 21, 241 lb uplift at joint 20, 187 lb uplift at joint 18, 344 lb uplift at joint 17, 193 lb uplift at joint 16, 234 lb uplift at joint 14, 574 lb uplift at joint 13 and 1743 lb uplift at joint 12.
6) This truss is designed in accordance with the 2006 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
7) This truss has been designed for a total drag load of 138 plf. Lumber DOL=(1.33) Plate grip DOL=(1.33) Connect truss to resist drag loads along bottom chord from 9-8-8 to 40-8-8 for 222.6 plf.
8) Truss designs and specifications are for the proprietary use by HPM Ltd. and their designates. All designs and specifications are only valid when used in conjunction with HPM manufacturing processes, quality control procedures, equipment and materials.

LOAD CASE(S) Standard

Job	Truss	Truss Type	Qty	Ply	Edith Kanaka'ole
HSL121313	GE1	GABLE	2	1	Job Reference (optional)

HPM Building Supply, Keaau, HI 96749, Sandy Lane — 7.350 s Jul 10 2012 MiTek Industries, Inc. Thu Nov 08 14:47:39 2012 Page 1

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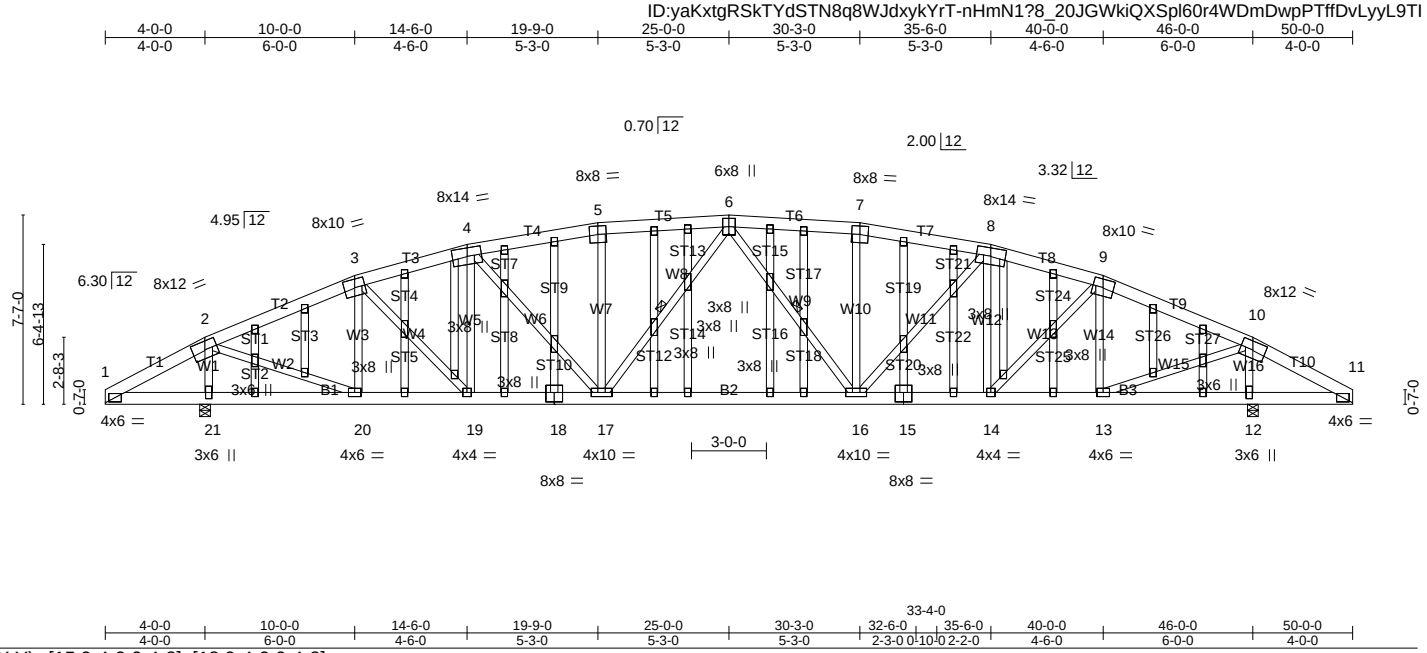

Plate Offsets (X,Y): [15:0-4-0,0-4-8], [18:0-4-0,0-4-8]

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	L/d	PLATES	GRIP
TCLL	20.0	Plates Increase	1.25	TC	0.26	Vert(LL)	0.13	16-17	>999	240	MT20	220/195
TCDL	8.0	Lumber Increase	1.25	BC	0.39	Vert(TL)	-0.32	16-17	>999	240		
BCLL	0.0	Rep Stress Incr	NO	WB	0.75	Horz(TL)	0.06	12	n/a	n/a		
BCDL	8.0	Code	IBC2006/TPI2002	(Matrix)							Weight: 459 lb	FT = 0%

LUMBER

TOP CHORD	2x6 DF No.2 G
BOT CHORD	2x6 DF No.1 G
WEBS	2x4 DF Std G
OTHERS	2x4 DF Std G

BRACING

TOP CHORD	Structural wood sheathing directly applied or 5-4-2 oc purlins.
BOT CHORD	Rigid ceiling directly applied or 6-0-0 oc bracing.
WEBS	1 Row at midpt 6-17, 6-16

MiTek recommends that Stabilizers and required cross bracing be installed during truss erection, in accordance with Stabilizer Installation guide.

REACTIONS (lb/size) 21=1800/0-5-2 (min. 0-1-15), 12=1800/0-5-2 (min. 0-1-15)
Max Uplift21=-1147(LC 3), 12=-1147(LC 3)

FORCES (lb) - Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.

TOP CHORD	2-3=-1715/906, 7-8=-2151/1262, 8-9=-1998/1158, 4-5=-2151/1262, 3-4=-1998/1158, 9-10=-1715/906, 5-6=-2109/1275, 6-7=-2109/1275
BOT CHORD	20-21=-214/284, 19-20=-633/1500, 18-19=-824/1884, 17-18=-824/1884, 16-17=-924/2114, 15-16=-824/1884, 14-15=-824/1884, 13-14=-633/1500, 12-13=-214/284
WEBS	2-21=-1652/1044, 2-20=-987/1838, 3-20=-566/401, 3-19=-277/556, 4-19=-329/203, 4-17=-114/428, 8-16=-114/428, 8-14=-329/203, 9-14=-277/556, 9-13=-566/401, 10-12=-1652/1044, 10-13=-987/1838

NOTES (10)

1) Unbalanced roof live loads have been considered for this design.
2) Wind: ASCE 7-05; 105mph; TCDL=4.8psf; BCDL=3.0psf; h=15ft; Cat. II; Exp C; enclosed; C-C Exterior(2); cantilever left and right exposed ; end vertical left and right exposed; Lumber DOL=1.33 plate grip DOL=1.33
3) Truss designed for wind loads in the plane of the truss only. For studs exposed to wind (normal to the face), see Standard Industry Gable End Details as applicable, or consult qualified building designer as per ANSI/TPI 1.
4) All plates are 3x4 MT20 unless otherwise indicated.
5) Gable studs spaced at 2-0-0 oc.
6) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
7) A plate rating reduction of 20% has been applied for the green lumber members.
8) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 1147 lb uplift at joint 21 and 1147 lb uplift at joint 12.
9) This truss is designed in accordance with the 2006 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
10) Truss designs and specifications are for the proprietary use by HPM Ltd. and their designates. All designs and specifications are only valid when used in conjunction with HPM manufacturing processes, quality control procedures, equipment and materials.

LOAD CASE(S) Standard

Job	Truss	Truss Type	Qty	Ply	Edith Kanaka'ole
HSL121313	TR1	ROOF TRUSS	2	1	Job Reference (optional)

HPM Building Supply, Keaau, HI 96749, Sandy Lane — 7.350 s Jul 10 2012 MiTek Industries, Inc. Thu Nov 08 14:47:40 2012 Page 1

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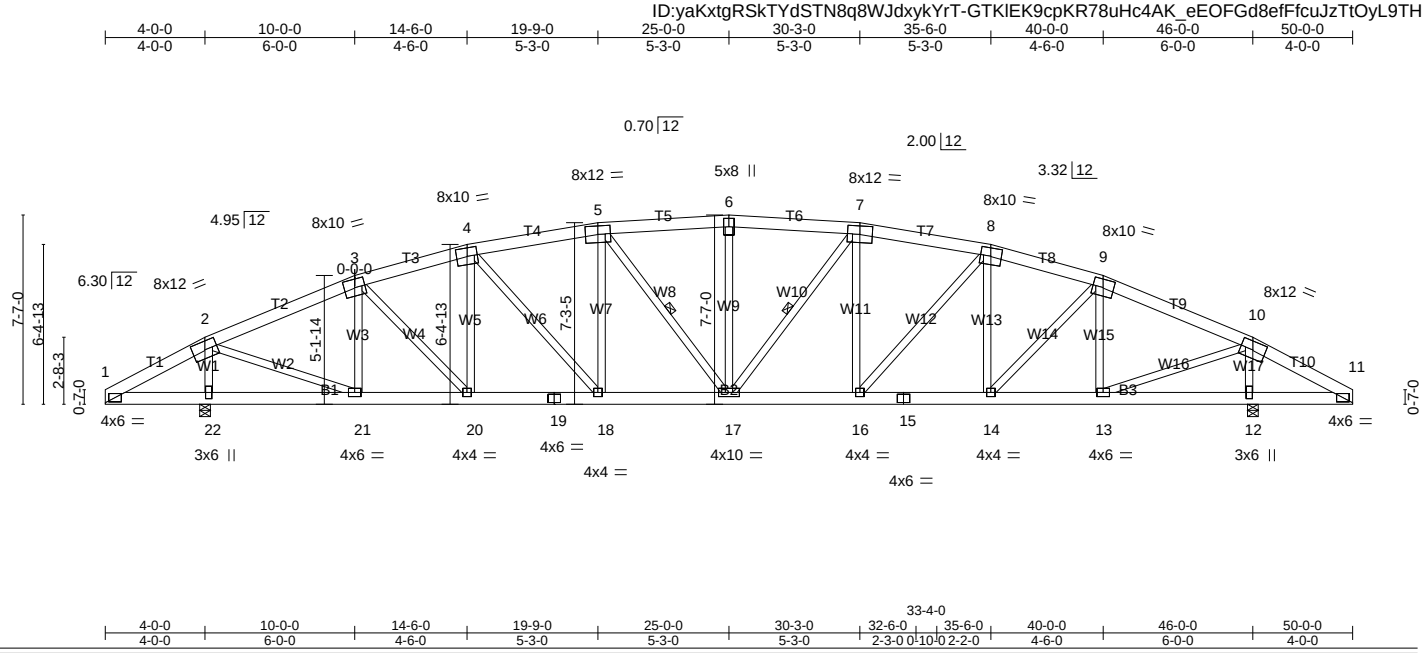

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	L/d	PLATES	GRIP
TCLL	20.0	Plates Increase	1.25	TC	0.26	Vert(LL)	0.13	17	>999	240	MT20	220/195
TCDL	8.0	Lumber Increase	1.25	BC	0.25	Vert(TL)	-0.25	17	>999	240		
BCLL	0.0	Rep Stress Incr	NO	WB	0.75	Horz(TL)	0.06	12	n/a	n/a		
BCDL	8.0	Code	IBC2006/TPI2002	(Matrix)							Weight: 360 lb	FT = 0%

LUMBER
TOP CHORD 2x6 DF No.2 G
BOT CHORD 2x6 DF No.1 G
WEBS 2x4 DF Std G

BRACING
TOP CHORD Structural wood sheathing directly applied or 5-4-6 oc purlins.
BOT CHORD Rigid ceiling directly applied or 6-0-0 oc bracing.
WEBS 1 Row at midpt 5-17, 7-17

MiTek recommends that Stabilizers and required cross bracing be installed during truss erection, in accordance with Stabilizer Installation guide.

REACTIONS (lb/size) 22=1800/0-5-2 (min. 0-1-15), 12=1800/0-5-2 (min. 0-1-15)
Max Uplift22=-1147(LC 3), 12=-1147(LC 3)

FORCES (lb) - Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.
TOP CHORD 2-3=-1714/906, 7-8=-2140/1267, 8-9=-2001/1157, 4-5=-2140/1267, 3-4=-2001/1157, 9-10=-1714/906, 5-6=-2144/1293, 6-7=-2144/1293
BOT CHORD 21-22=-213/284, 20-21=-634/1499, 19-20=-822/1888, 18-19=-822/1888, 17-18=-903/2084, 16-17=-903/2084, 15-16=-822/1888, 14-15=-822/1888, 13-14=-634/1499, 12-13=-213/284
WEBS 2-22=-1650/1045, 2-21=-988/1836, 3-21=-572/399, 3-20=-274/563, 4-20=-309/210, 4-18=-125/406, 8-16=-125/406, 8-14=-309/210, 9-14=-274/563, 9-13=-572/399, 10-12=-1650/1045, 10-13=-988/1836

NOTES (7)
1) Unbalanced roof live loads have been considered for this design.
2) Wind: ASCE 7-05; 105mph; TCDL=4.8psf; BCDL=3.0psf; h=15ft; Cat. II; Exp C; enclosed; C-C Exterior(2); cantilever left and right exposed ; end vertical left and right exposed; Lumber DOL=1.33 plate grip DOL=1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 1147 lb uplift at joint 22 and 1147 lb uplift at joint 12.
6) This truss is designed in accordance with the 2006 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
7) Truss designs and specifications are for the proprietary use by HPM Ltd. and their designates. All designs and specifications are only valid when used in conjunction with HPM manufacturing processes, quality control procedures, equipment and materials.

LOAD CASE(S) Standard

Job	Truss	Truss Type	Qty	Ply	Edith Kanaka'ole
HSL121313	TR2	ROOF TRUSS	4	1	bow Job Reference (optional)

HPM Building Supply, Keaau, HI 96749, Sandy Lane — 7.350 s Jul 10 2012 MiTek Industries, Inc. Thu Nov 08 14:47:40 2012 Page 1

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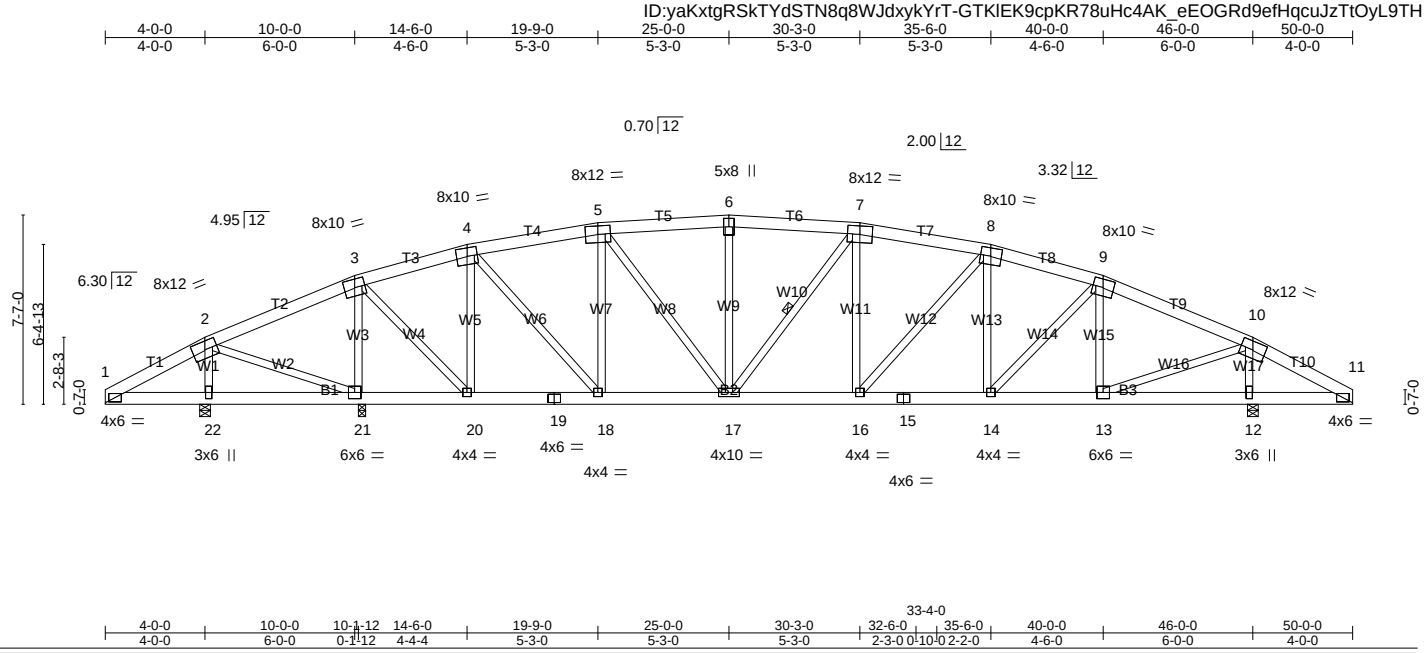

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	L/d	PLATES	GRIP
TCLL	20.0	Plates Increase	1.25	TC	0.25	Vert(LL)	0.08	16-17	>999	240	MT20	220/195
TCDL	8.0	Lumber Increase	1.25	BC	0.19	Vert(TL)	-0.16	16-17	>999	240		
BCLL	0.0	Rep Stress Incr	NO	WB	0.61	Horz(TL)	0.03	12	n/a	n/a		
BCDL	8.0	Code	IBC2006/TPI2002	(Matrix)							Weight: 360 lb	FT = 0%

LUMBER
TOP CHORD 2x6 DF No.2 G
BOT CHORD 2x6 DF No.1 G
WEBS 2x4 DF Std G

BRACING
TOP CHORD Structural wood sheathing directly applied or 6-0-0 oc purlins.
BOT CHORD Rigid ceiling directly applied or 6-0-0 oc bracing.
WEBS 1 Row at midpt 7-17

MiTek recommends that Stabilizers and required cross bracing be installed during truss erection, in accordance with Stabilizer Installation guide.

REACTIONS (lb/size) 22=290/0-5-2 (min. 0-1-8), 21=1764/0-3-8 (min. 0-1-14), 12=1546/0-5-2 (min. 0-1-10)
Max Uplift22=-347(LC 3), 21=-935(LC 3), 12=-1013(LC 3)
Max Grav22=356(LC 4), 21=1764(LC 1), 12=1546(LC 1)

FORCES (lb) - Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.
TOP CHORD 1-2=-261/278, 2-3=-192/445, 7-8=-1548/953, 8-9=-1538/911, 4-5=-1164/750, 3-4=-623/427, 9-10=-1369/723, 5-6=-1398/898, 6-7=-1398/898
BOT CHORD 1-22=-182/256, 21-22=-196/275, 20-21=-401/373, 19-20=-107/539, 18-19=-107/539, 17-18=-389/1114, 16-17=-596/1504, 15-16=-587/1444, 14-15=-587/1444, 13-14=-468/1185, 12-13=-209/282
WEBS 2-22=-272/281, 3-21=-1591/939, 3-20=-700/1366, 4-20=-919/533, 4-18=-429/871, 9-14=-174/374, 9-13=-451/334, 10-12=-1405/914, 10-13=-807/1494, 5-18=-552/346, 5-17=-218/523

NOTES (7)
1) Unbalanced roof live loads have been considered for this design.
2) Wind: ASCE 7-05; 105mph; TCDL=4.8psf; BCDL=3.0psf; h=15ft; Cat. II; Exp C; enclosed; C-C Exterior(2); cantilever left and right exposed ; end vertical left and right exposed; Lumber DOL=1.33 plate grip DOL=1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 347 lb uplift at joint 22, 935 lb uplift at joint 21 and 1013 lb uplift at joint 12.
6) This truss is designed in accordance with the 2006 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
7) Truss designs and specifications are for the proprietary use by HPM Ltd. and their designates. All designs and specifications are only valid when used in conjunction with HPM manufacturing processes, quality control procedures, equipment and materials.

LOAD CASE(S) Standard

Job	Truss	Truss Type	Qty	Ply	Edith Kanaka'ole
HSL121313	TR2A	ROOF TRUSS	5	1	bow Job Reference (optional)

HPM Building Supply, Keaau, HI 96749, Sandy Lane — 7.350 s Jul 10 2012 MiTek Industries, Inc. Thu Nov 08 14:47:41 2012 Page 1

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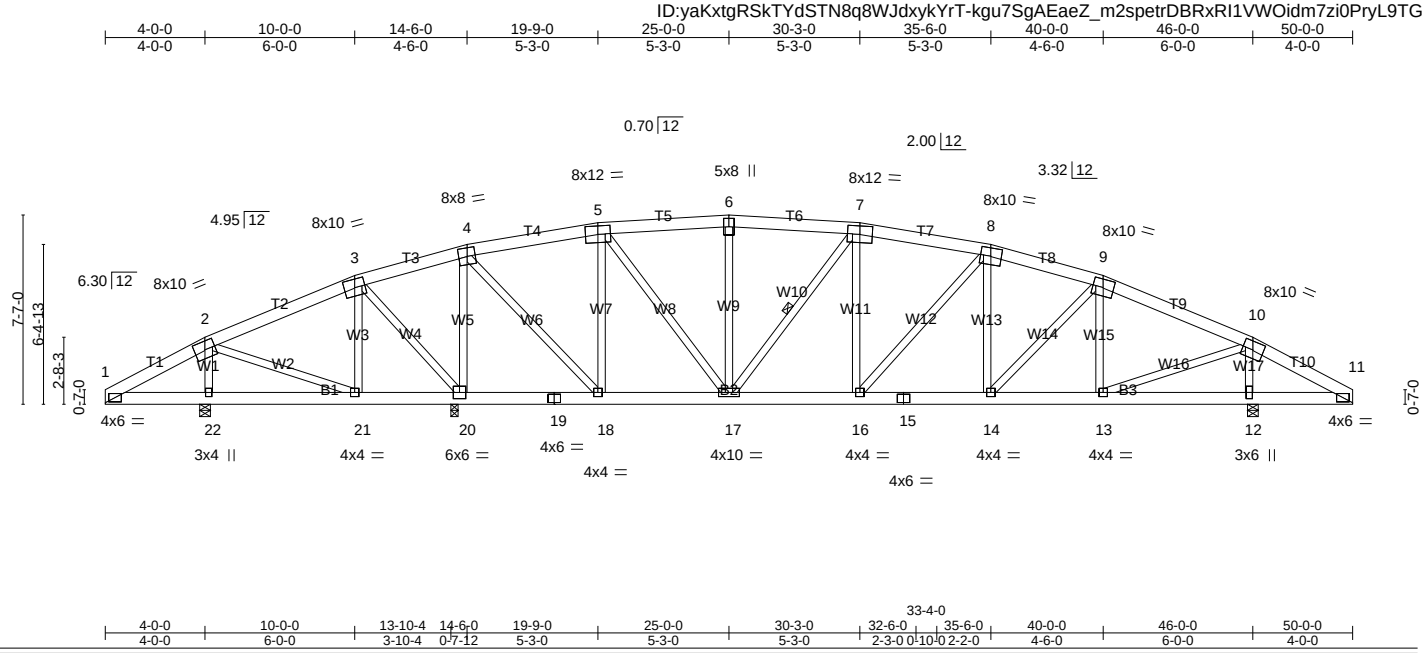

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	L/d	PLATES	GRIP
TCLL	20.0	Plates Increase	1.25	TC	0.24	Vert(LL)	0.06	16	>999	240	MT20	220/195
TCDL	8.0	Lumber Increase	1.25	BC	0.15	Vert(TL)	-0.12	14-16	>999	240		
BCLL	0.0	Rep Stress Incr	NO	WB	0.76	Horz(TL)	0.02	12	n/a	n/a		
BCDL	8.0	Code	IBC2006/TPI2002	(Matrix)							Weight: 360 lb	FT = 0%

LUMBER
TOP CHORD 2x6 DF No.2 G
BOT CHORD 2x6 DF No.1 G
WEBS 2x4 DF Std G

BRACING
TOP CHORD Structural wood sheathing directly applied or 6-0-0 oc purlins.
BOT CHORD Rigid ceiling directly applied or 6-0-0 oc bracing.
WEBS 1 Row at midpt 7-17

MiTek recommends that Stabilizers and required cross bracing be installed during truss erection, in accordance with Stabilizer Installation guide.

REACTIONS (lb/size) 22=501/0-5-2 (min. 0-1-8), 20=1720/0-3-8 (min. 0-1-13), 12=1379/0-5-2 (min. 0-1-8)
Max Uplift22=-454(LC 3), 20=-918(LC 3), 12=-923(LC 3)
Max Grav22=556(LC 4), 20=1720(LC 1), 12=1379(LC 1)

FORCES (lb) - Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.
TOP CHORD 1-2=-249/255, 7-8=-1158/743, 8-9=-1233/747, 4-5=-519/401, 3-4=-102/402, 9-10=-1141/600, 5-6=-908/634, 6-7=-909/634
BOT CHORD 21-22=-190/271, 19-20=-322/356, 18-19=-322/356, 17-18=-41/469, 16-17=-389/1122, 15-16=-430/1152, 14-15=-430/1152, 13-14=-356/978, 12-13=-206/280
WEBS 2-22=-441/371, 3-20=-360/220, 4-18=-605/1202, 9-14=-108/251, 9-13=-371/291, 10-12=-1243/827, 10-13=-685/1269, 5-18=-819/490, 5-17=-356/723, 7-17=-369/215, 4-20=-1344/760

NOTES (7)
1) Unbalanced roof live loads have been considered for this design.
2) Wind: ASCE 7-05; 105mph; TCDL=4.8psf; BCDL=3.0psf; h=15ft; Cat. II; Exp C; enclosed; C-C Exterior(2); cantilever left and right exposed ; end vertical left and right exposed; Lumber DOL=1.33 plate grip DOL=1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 454 lb uplift at joint 22, 918 lb uplift at joint 20 and 923 lb uplift at joint 12.
6) This truss is designed in accordance with the 2006 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
7) Truss designs and specifications are for the proprietary use by HPM Ltd. and their designates. All designs and specifications are only valid when used in conjunction with HPM manufacturing processes, quality control procedures, equipment and materials.

LOAD CASE(S) Standard

Job	Truss	Truss Type	Qty	Ply	Edith Kanaka'ole
HSL121313	TR3	ROOF TRUSS	9	1	bow Job Reference (optional)

HPM Building Supply, Keaau, HI 96749, Sandy Lane — 7.350 s Jul 10 2012 MiTek Industries, Inc. Thu Nov 08 14:47:42 2012 Page 1

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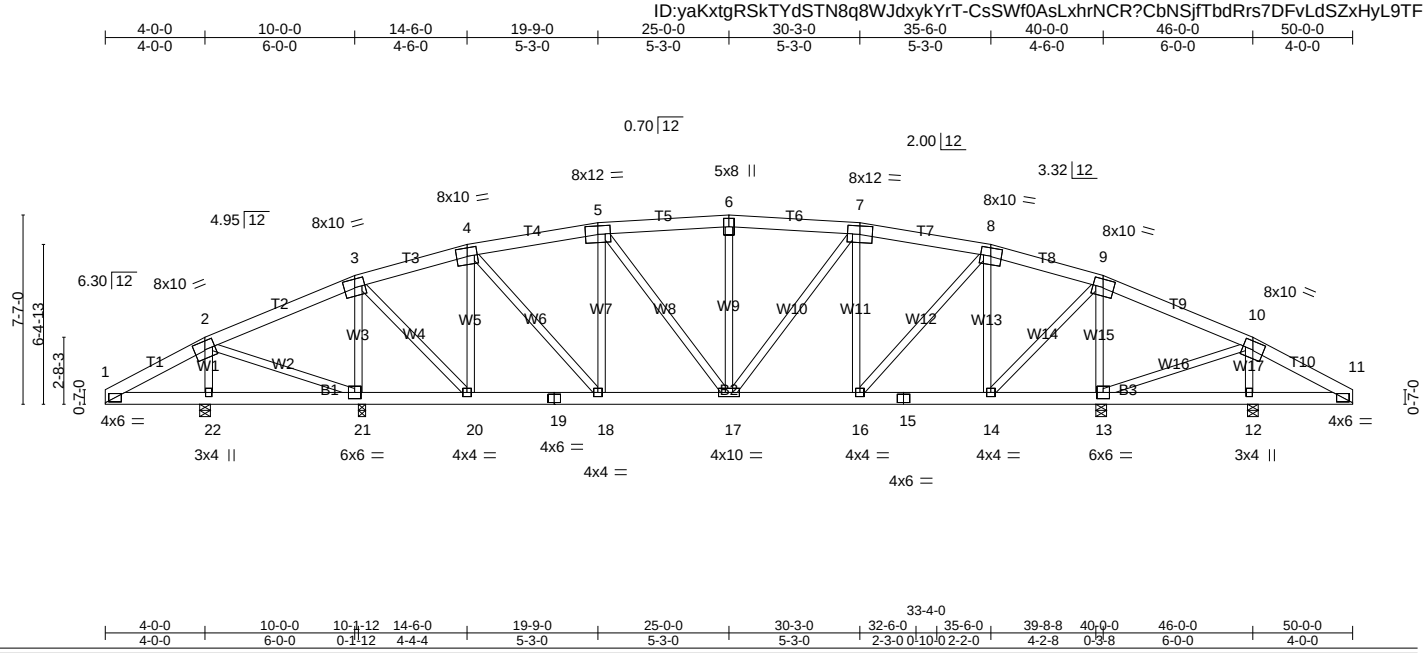

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	L/d	PLATES	GRIP
TCLL	20.0	Plates Increase	1.25	TC	0.27	Vert(LL)	0.06	17	>999	240	MT20	220/195
TCDL	8.0	Lumber Increase	1.25	BC	0.14	Vert(TL)	-0.09	17	>999	240		
BCLL	0.0	Rep Stress Incr	NO	WB	0.48	Horz(TL)	0.01	13	n/a	n/a		
BCDL	8.0	Code	IBC2006/TPI2002	(Matrix)							Weight: 360 lb	FT = 0%

LUMBER
TOP CHORD 2x6 DF No.2 G
BOT CHORD 2x6 DF No.1 G
WEBS 2x4 DF Std G

BRACING
TOP CHORD Structural wood sheathing directly applied or 6-0-0 oc purlins.
BOT CHORD Rigid ceiling directly applied or 6-0-0 oc bracing.

MiTek recommends that Stabilizers and required cross bracing be installed during truss erection, in accordance with Stabilizer Installation guide.

REACTIONS All bearings 0-5-2 except (jt=length) 21=0-3-8.
(lb) - Max Uplift All uplift 100 lb or less at joint(s) except 22=-634(LC 3), 21=-1159(LC 3), 13=-1159(LC 3), 12=-634(LC 3)
Max Grav All reactions 250 lb or less at joint(s) except 22=441(LC 4), 21=1386(LC 1), 13=1386(LC 1), 12=441(LC 5)

FORCES (lb) - Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.
TOP CHORD 1-2=-251/269, 2-3=-110/282, 7-8=-908/846, 8-9=-554/533, 10-11=-251/269, 4-5=-908/846, 3-4=-554/533, 9-10=-110/282, 5-6=-972/925, 6-7=-972/925
BOT CHORD 1-22=-174/263, 21-22=-196/290, 20-21=-241/351, 19-20=-128/480, 18-19=-128/480, 17-18=-389/866, 16-17=-389/866, 15-16=-128/480, 14-15=-128/480, 13-14=-241/351, 12-13=-196/290, 11-12=-174/263
WEBS 2-22=-351/400, 3-21=-1277/1019, 3-20=-700/1046, 4-20=-686/564, 4-18=-397/584, 8-16=-397/584, 8-14=-686/564, 9-14=-700/1046, 9-13=-1277/1019, 10-12=-351/400, 5-18=-341/314, 7-16=-341/314, 5-17=-91/251, 7-17=-91/251

NOTES (7)
1) Unbalanced roof live loads have been considered for this design.
2) Wind: ASCE 7-05; 105mph; TCDL=4.8psf; BCDL=3.0psf; h=15ft; Cat. II; Exp C; partially; C-C Exterior(2); cantilever left and right exposed ; end vertical left and right exposed; porch left and right exposed; Lumber DOL=1.33 plate grip DOL=1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 634 lb uplift at joint 22, 1159 lb uplift at joint 21, 1159 lb uplift at joint 13 and 634 lb uplift at joint 12.
6) This truss is designed in accordance with the 2006 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
7) Truss designs and specifications are for the proprietary use by HPM Ltd. and their designates. All designs and specifications are only valid when used in conjunction with HPM manufacturing processes, quality control procedures, equipment and materials.

LOAD CASE(S) Standard

Job	Truss	Truss Type	Qty	Ply	Edith Kanaka'ole
HSL121313	TR4	ROOF TRUSS	27	1	bow Job Reference (optional)

HPM Building Supply, Keaau, HI 96749, Sandy Lane — 7.350 s Jul 10 2012 MiTek Industries, Inc. Thu Nov 08 14:47:43 2012 Page 1

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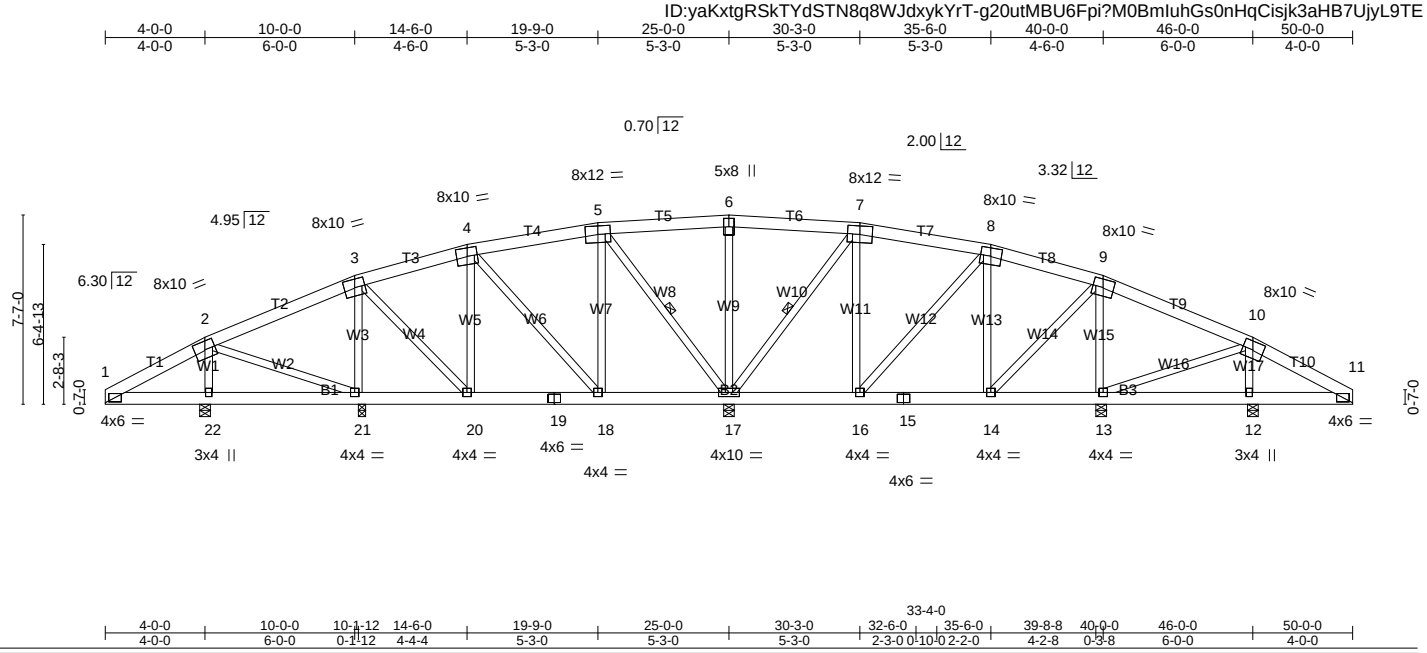

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	L/d	PLATES	GRIP
TCLL	20.0	Plates Increase	1.25	TC	0.21	Vert(LL)	-0.01	14-16	>999	240	MT20	220/195
TCDL	8.0	Lumber Increase	1.25	BC	0.10	Vert(TL)	-0.02	14-16	>999	240		
BCLL	0.0	Rep Stress Incr	NO	WB	0.28	Horz(TL)	0.01	12	n/a	n/a		
BCDL	8.0	Code	IBC2006/TPI2002	(Matrix)							Weight: 360 lb	FT = 0%

LUMBER
TOP CHORD 2x6 DF No.2 G
BOT CHORD 2x6 DF No.1 G
WEBS 2x4 DF Std G

BRACING
TOP CHORD Structural wood sheathing directly applied or 6-0-0 oc purlins.
BOT CHORD Rigid ceiling directly applied or 6-0-0 oc bracing.
WEBS 1 Row at midpt 5-17, 7-17

MiTek recommends that Stabilizers and required cross bracing be installed during truss erection, in accordance with Stabilizer Installation guide.

REACTIONS All bearings 0-5-2 except (jt=length) 21=0-3-8.
(lb) - Max Uplift All uplift 100 lb or less at joint(s) except 22=-474(LC 3), 21=-335(LC 3), 17=-677(LC 3), 13=-335(LC 3), 12=-474(LC 3)
Max Grav All reactions 250 lb or less at joint(s) except 22=536(LC 4), 21=677(LC 4), 17=1222(LC 1), 13=677(LC 5), 12=536(LC 5)

FORCES (lb) - Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.
TOP CHORD 1-2=-251/259, 10-11=-251/259
BOT CHORD 21-22=-194/274, 12-13=-194/274
WEBS 2-22=-435/396, 3-21=-636/408, 3-20=-141/365, 6-17=-327/216, 9-14=-141/365, 9-13=-636/408, 10-12=-435/396, 5-17=-505/303, 7-17=-505/303

NOTES (7)
1) Unbalanced roof live loads have been considered for this design.
2) Wind: ASCE 7-05; 105mph; TCDL=4.8psf; BCDL=3.0psf; h=15ft; Cat. II; Exp C; enclosed; C-C Exterior(2); cantilever left and right exposed ; end vertical left and right exposed; Lumber DOL=1.33 plate grip DOL=1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 474 lb uplift at joint 22, 335 lb uplift at joint 21, 677 lb uplift at joint 17, 335 lb uplift at joint 13 and 474 lb uplift at joint 12.
6) This truss is designed in accordance with the 2006 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
7) Truss designs and specifications are for the proprietary use by HPM Ltd. and their designates. All designs and specifications are only valid when used in conjunction with HPM manufacturing processes, quality control procedures, equipment and materials.

LOAD CASE(S) Standard